

Transmitted by the expert from France

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PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION No. 48

(Installation of lighting and light-signalling devices)

Transmitted by the expert France

Note: The text reproduced below was prepared by the expert from **France** in order to improve road safety by the insertion into the Regulation of new provisions for the automatic activation of a hazard warning **light display** and **of an emergency braking light display**. It is based on TRANS/WP.29/GRE/2005/2. The modifications to TRANS/WP.29/GRE/2005/2 or the current text of the Regulation are marked in **bold** characters.

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

A. PROPOSAL

Paragraph 2.7.18., amend to read:

2.7.18. "Hazard warning light display" means the simultaneous operation of all of a vehicle's direction-indicator lamps to show that the vehicle temporarily constitutes a special danger to other road-users;

Insert a new paragraph 2.27., to read:

"2.27. "Emergency braking light display" means the **specific** flashing of **either all of a vehicle's direction indicator lamps or all of a** 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 **light display**, amber side-marker lamps complying with paragraph 6.18.7. below, and the **braking light display** shall be flashing lamps."

Paragraph 5.15., amend to read:

"5.15. **The colours of the light emitted by the lamps are the following:**

...

hazard warning light display :amber

...

emergency braking light display :amber or red

..."

Paragraphs 6.6. and 6.6.1., amend to read:

"6.6. **HAZARD WARNING LIGHT DISPLAY**

6.6.1. Presence

Mandatory.

The **hazard warning light display** shall be given by simultaneous operation of the direction-indicator lamps in accordance with the requirements of paragraph 6.5. above."

Paragraph 6.6.7., amend to read:

"6.6.7. Electrical connections

6.6.7.1 The **hazard warning light display** 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 light display** 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. *(Waiting for conclusion of GRRF...)*

when the braking system provides the hazard warning signal defined in Regulations Nos. 13 and 13-H.

or

instead of the emergency braking light display, if not fitted on the vehicle, when the braking system provides the emergency braking signal defined in Regulations Nos. 13 and 13-H.

6.6.7.3.2. following a vehicle crash;

6.6.7.3.3. when the vehicle is in situation of becoming an imminent danger to the other road users.

6.6.7.4. When activated automatically, the hazard warning **light display** shall remain activated until it is manually or automatically deactivated. The automatic deactivation shall occur when **the hazard warning signal or the emergency braking signal defined in Regulations Nos. 13 and 13-H are no longer provided.**

6.6.7.5. The hazard warning **light display** shall not **be activated** automatically at the same time as the emergency **braking light display** is operating."

Paragraph 6.6.9., amend to read:

"6.6.9. Other requirements

As specified in paragraph 6.5.9. If a power-driven vehicle is equipped to draw a trailer the hazard warning **light display** control shall also be capable of bringing the direction-indicator lamps on the trailer into action. The hazard warning **light display** shall be able to function even if the device which starts or stops the engine is in a position which makes it impossible to start the engine."

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

"6.22. **EMERGENCY BRAKING LIGHT DISPLAY (EBLD)**

6.22.1. Presence

Optional.

6.22.2. Number

As specified **either in paragraph 6.5.2. or** in paragraph 6.7.2.

6.22.3. Arrangement

As specified **either in paragraph 6.5.3. or** in paragraph 6.7.3.

6.22.4. Position

As specified **either in paragraph 6.5.4. or** in paragraph 6.7.4.

6.22.5. Geometric visibility

As specified **either in paragraph 6.5.5. or** in paragraph 6.7.5.

6.22.6. Orientation

As specified **either in paragraph 6.5.6. or** in paragraph 6.7.6.

6.22.7. Electrical connections

6.22.7.1. The **emergency braking light display** shall be given by the simultaneous operation of **either all of the vehicle's direction indicator lamps or all of the vehicle's 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 **emergency braking light display** shall operate independently of the other lamps.

6.22.7.3. The **emergency braking light display** shall only activate

(Waiting for conclusion of GRRF...)

when the braking system provides the emergency braking signal defined in Regulations Nos. 13 and 13-H.

6.22.7.4. The **emergency braking light display** shall be automatically deactivated

when the hazard warning light display is activated;

or

when the emergency braking signal defined in Regulations Nos. 13 and 13-H is no longer provided

6.22.7.5. The **emergency braking light display shall not be activated automatically at the same time as the hazard warning light display is operating.**

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 into action **either all of the trailer direction indicator lamps or all of the trailer stop lamps, depending on the emergency braking light display used on the vehicle.**

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

* * *

B. JUSTIFICATION

Automatic activation of a hazard warning **light display** and of an emergency braking **light display** is intended to increase road safety.

This proposal is intended to find a solution to the present situation in GRE and CATP.

Paragraph 6.6.7.3.1 to 3

To avoid car without information about emergency braking, the use of hazard warning light display is allowed on cars which are not equipped with EBLD.

In addition, activation of hazard warning light display is permitted when the vehicle is in situation of becoming an imminent danger to the other road users, as described by the car manufacturer.

Paragraph 2.7.18.

The name is changed to avoid mis-understanding between:

- **the "signal" currently defined by the GRRF and which will be delivered by on-board system,**
- **the light "function" or the "light display" (see discussions at 6th IWG – GTR in Bonn November 2004) which is the lighting solution chosen to provide information about special danger to other road-users**

Paragraph 2.27.

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

As for hazard warning light display, the name is changed to avoid mis-understanding about wording.

The definition is based on that for **emergency braking as it is currently defined by GRRF**, 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 Braking Light Display (EBLD: see Netherlands and TNO proposed definition)** by collision mitigation systems.

Such new "signals" definitions could be proposed to GRRF:

- **"braking signal" : instead of "relevant signal" (see GRE/2002/28/Rev.1)**
- **"hazard warning signal"**
- **"emergency braking signal"**

Paragraphs 2.27., 5.15 and 6.22.

The alternative for EBLD application is proposed between:

- **the activation of the Direction Indicator Lamps at a upper frequency as for Hazard Warning Light Display (about twice as much),**
- **the activation of the Stop Lamps in the same frequency limits,**

for the following reasons :

- this frequency appears in various studies to be the most appropriate and the more shared in common criteria,
- up to now, in the same studies, the impact of colour has not been judged to be a relevant criteria concerning safety, although, there is evidence that application of Direction Indicator lamps is the only solution to be compatible with current Vienna Convention, and that in addition it increases the visibility of rear side of concerning vehicle as well as front and lateral sides,
- it is important to let to the manufacturers' discretion the possibility of offering the best reliability about the installed systems depending on small and low-cost vehicles or bigger and costly ones (see paragraph "Cost and reliability effectiveness with the broadest brand vehicle approach" in TRANS/GRE/2004/46 : the application of Direction Indicators Lamps offers obviously the more economic and cost benefits potential).

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 6.22.

This follows the same format as for hazard warning **light display**.

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 **EBLD** would be cost-beneficial. Therefore, installation should be at the manufacturers' discretion.

Paragraph 6.22.7.

(Waiting for conclusion of GRRF...)

Paragraphs 6.22.7.4 and .5

Deactivation criteria are included to ensure that the **light display** does not remain active any longer than necessary. In particular, it is anticipated that the **EBLD** would not remain operating when the hazard-warning **light display** is activated (either automatically or manually).

Paragraph 6.22.9.

This paragraph is derived from the requirements for the hazard-warning **light display** as a sensible extension of the **EBLD** system in case of a vehicle equipped with a trailer.

Moreover this is one reason more for keeping the frequency of EBLD compatible with filament lamps.

The second sub-paragraph is intended to **determine the time limit of the first flashing light emission and extinction after EBLD activation.**

