

Proposed amendments to UN Regulation No.79, 02 and 03 Series of amendments (Corrective steering function for N2, N3)

1. Proposal

Definition (not amended, mentioned for the best convenience of GRVA)

2.3.4.2. *"Corrective Steering Function (CSF)"* means a control function within an electronic control system whereby, for a limited duration, changes to the steering angle of one or more wheels may result from the automatic evaluation of signals initiated on-board the vehicle, in order:

- (a) To compensate a sudden, unexpected change in the side force of the vehicle, or;
- (b) To improve the vehicle stability (e.g. side wind, differing adhesion road conditions " μ -split"), or;
- (c) To correct lane departure. (e.g. to avoid crossing lane markings, leaving the road)."

Paragraph 5.1.6.1., add a new sub-paragraph 5.1.6.1.2.3., to read:

"5.1.6.1. A CSF system shall be subject to the requirements of Annex 6.

5.1.6.1.1. Every CSF intervention shall immediately be indicated to the driver by an optical warning signal which is displayed for at least 1 s or as long as the intervention exists, whichever is longer.

5.1.6.1.2. In the case of a CSF intervention which is based on the evaluation of the presence and location of lane markings or boundaries of the lane the following shall apply additionally:

5.1.6.1.2.1. In the case of an intervention longer than:

- (a) 10 s for vehicles of category M₁ and N₁, or
- (b) 30 s for vehicles of category M₂, M₃ and N₂, N₃,

an acoustic warning signal shall be provided until the end of the intervention.

5.1.6.1.2.2. In the case of two or more consecutive interventions within a rolling interval of 180 seconds and in the absence of a steering input by the driver during the intervention, an acoustic warning signal shall be provided by the system during the second and any further intervention within a rolling interval of 180 seconds. Starting with the third intervention (and subsequent interventions) the acoustic warning signal shall continue for at least 10 seconds longer than the previous warning signal.

5.1.6.1.2.3. For vehicles of categories M₂ and M₃ equipped with a Lane Departure Warning System (LDWS) fulfilling the technical requirements of Regulation No. 130, the acoustic warning signal specified in paragraphs 5.1.6.1.2.1. and 5.1.6.1.2.2. may be replaced by a haptic warning, provided it is not solely given via the steering wheel."

Paragraph 3.1.1.1., amend to read:

"3.1.1. Warning test for CSF

3.1.1.1. The vehicle shall be driven with an activated CSF on a road with lane markings on each side of the lane. In case of a CSF whose interventions are solely based on the evaluation of the presence and location of lane boundaries, the vehicle shall be driven on a road delimited by the boundaries as declared by the manufacturer (e.g. road edge).

The test conditions and the vehicle test speed shall be within the operating range of the system.

During the test, the duration of the CSF interventions and of the optical and acoustic **or haptic** warning signal, **as relevant**, shall be recorded.

In the case of paragraph 5.1.6.1.2.1. of this Regulation, the vehicle shall be driven such that it attempts to leave the lane and causes CSF intervention to be maintained for a period longer than 10s (for M₁, N₁) or 30s (for M₂, M₃, N₂, N₃). If such a test cannot be practically achieved due to e.g. the limitations of the test facilities, with the consent of the type approval authority this requirement may be fulfilled through the use of documentation.

The test requirements are fulfilled if:

(a) The acoustic **or haptic** warning, **as relevant**, is provided no later than 10s (for M₁, N₁) or 30s (for M₂, M₃, N₂, N₃) after the beginning of the intervention.

In the case of paragraph 5.1.6.1.2.2. of this Regulation, the vehicle shall be driven such that it attempts to leave the lane and causes at least three interventions of the system within a rolling interval of 180 s.

The test requirements are fulfilled if:

- (a) An optical warning signal is provided for each intervention, as long as the intervention exists, and
- (b) An acoustic **or haptic** warning signal, **as relevant**, is provided at the second and third intervention
and
- (c) The acoustic **or haptic** warning signal, **as relevant**, at the third intervention is at least 10s longer than the one at the second intervention.”

2. Justifications

1. LDWS regulation UN-R130 requires a warning as follows:
 - (a) At least two warning means out of optical, acoustic and haptic, or
 - (b) One warning means out of haptic and acoustic, with spatial indication
2. Current situation on the market is that most of long distance coaches provide an optical and a haptic warning, in order to avoid alerting passengers with an acoustic signal.
3. Lane departure warning feature will likely include in the future some new CSF functions which will provide a steering input to correct lane departure.
4. To follow the current philosophy of LDWS warning in long distance coaches, the warning of such CSF function should be opened to using haptic signal as an alternative to the acoustic one which is currently required in R79-02. This alternative should be limited to the vehicles equipped with an LDWS fulfilling UN-R130 requirements. Additionally, in order to prevent risks that of a driver misusing the system by driving hands-off, a requirement is added to specify that the haptic warning cannot be solely given via the steering wheel (and should be e.g. provided in the driver's seat).