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Item XXX of the provisional agenda

Regulation No. 79

Proposal for amendments to Regulation No. 79 (Steering equipment).

Submitted by the informal group on LKAS *

This text was prepared by the experts from. Modifications to the existing text of the Regulation are marked in bold for new or strikethrough for deleted characters.

* In accordance with the programme of work of the Inland Transport Committee for 2010–2014 (ECE/TRANS/208, para. 106, ECE/TRANS/2010/8, programme activity 02.4), the World Forum will develop, harmonize and update 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 2.3.4.2.1., to read:

“2.3.4.2.1. "Lane Keeping Assistance System (LKAS)" means a system which assists the driver in keeping the vehicle within the chosen lane, by influencing the lateral movement of the vehicle.”

Insert new paragraphs 5.1.6.2. to 5.1.6.5., to read:

“5.1.6.2. The LKAS shall be designed so that excessive intervention of steering control (e.g. an excessive steering torque) is suppressed to assure the steering operability by the driver and to avoid unexpected vehicle behaviour, during its operation.

The end of the intervention shall be such that the LKAS reduces its directional control to zero in a progressive manner, to ensure easy and safe handling of the vehicle, as defined in paragraph 5.1.1. The directional control fade-out strategy shall be at the discretion of the vehicle manufacturer.

The steering control effort necessary to override the directional control provided by the LKAS shall not exceed the value specified in paragraph 6.2.4.2. for an intact steering equipment.”

5.1.6.3. When the LKAS is temporarily not available, for example due to inclement weather conditions, the system shall clearly inform the driver about the system status, except if the system is in the OFF mode, e.g. switched off. This exception does not affect the required warning in the case of a system malfunction.

5.1.6.4. The vehicle may be equipped with a means for the driver to activate or deactivate the LKAS.

5.1.6.5. The LKAS shall provide a means of detecting that the driver is likely to be no longer in primary control of the vehicle (e.g. by sensing the driver's input on the steering wheel). This means of detection is required to work when the system is available (i.e. ready to intervene or intervening).

When the LKAS is available and has detected that the driver is likely to be no longer in primary control of the vehicle, [until the driver takes primary control again / encouraging the driver to take primary control again / to call the driver's attention.], effective warnings shall be given simultaneously or in a cascade involving at least two means out of optical, acoustic and appropriate haptic.”

II. Justification:

1. Through the discussion of LKAS Small Drafting Group (SDG), the above requirements were provided.
2. Paragraph 2.3.4.2.1. is necessary to define LKAS and to introduce the related requirements in this Regulation.
3. Paragraph 5.1.6.2. regards the safety of the steering system in association with the LKAS, the paragraph 5.1.6. in the current Regulation No. 79 prescribes that the LKAS shall

cause no deterioration in the performance of basic steering system. However, it is necessary to further clarify its safety for maintaining the controllability by a driver and for avoiding the confusion of a driver.

The proposed wording refers to the existing wording in UN R79 paragraph 5.1.1: “The steering system shall ensure easy and safe handling of the vehicle up to its maximum design speed”. This wording is achieving the intention pursued in current LKAS proposal per paragraph 5.1.6.2 of smooth fade out of the assistant effort.

Furthermore, this wording avoids any interpretation issue, since referring to existing UN R79 provisions. The last sentence of paragraph 5.1.6.2 provides specific requirements, which are completing the general requirement on “easy and safe handling of the vehicle”.

4. Paragraph 5.1.6.3. is necessary to inform the driver about the LKAS operation status when LKAS is not able to be functioning except if the system is in the OFF mode, e.g. switched off.

5. Paragraph 5.1.6.4. is necessary so that the driver may choose the deactivation of the system. The purpose of this paragraph is to clarify that the vehicle may be equipped with a mean for the driver to activate or deactivate LKAS.

6. Paragraph 5.1.6.5. was agreed within the SDG, that the vehicle shall have at least one mean to detect driver attention e.g. by sensing the driver's hands on the steering wheel, because the 1968 Vienna Convention requires that the driver is always in primary control of the vehicle. The wording clarifies that the means of detecting that the driver is likely to be no longer in primary control of the vehicle is required only when the system is available (e.g. not in off mode or not available as defined in paragraph 5.1.6.3).

The LKAS ad-hoc group still could not decide at its October 2014 meeting about the three options indicated in square brackets. It is the intention of the group to table an informal document amending this particular paragraph, and promoting one of the three options, such that GRRF at its 79th session can rely on a clear recommendation from the ad-hoc group.