

Proposal for amendments to GRRF-78-05 (on LKAS)

The amendments to the proposal and the justification part proposed by OICA are indicated in **red** text

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. Lane Keeping Assistance System 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. In addition, it shall be designed such that in its non-fault condition, any intervention shall fade out smoothly. The steering control effort necessary to counteract an intervention shall not exceed the specified value in paragraph 6.2.4.2. for a normally operating intact system.

5.1.6.3. When the Lane Keeping Assistance System 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 Lane Keeping Assistance System.

5.1.6.5. ~~{The system shall have at least 1 type of means to detect driver attention e.g. by sensing the driver's hands on the steering wheel. When the system detects inattention of the driver, it shall give an effective warning [, which shall be at least two means out of optical, acoustic and appropriate haptic,] to call the driver's attention.}~~"

The Lane Keeping Assistance System shall provide a means of detecting that the driver is likely to be no longer in primary control of the steering system (e.g. by sensing the driver's input on the steering wheel). When the Lane Keeping Assistance System is intervening and has detected that the driver is likely to be no longer in primary control, noticeable 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.
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.

Justification to the OICA proposal for 5.1.6.5:

Paragraph in 5.1.6.5 is following the principle agreed at the SDG meeting, with a refined wording and the following changes:

- The wording "system is intervening" is added to clarify that the warning is necessary only during system intervention, and not during phases where e.g. the system is OFF or temporarily not available (e.g. due to inclement weather conditions). Limiting the warning to when the system is intervening is also a way to improve reliability of the "means of detecting that the driver is likely no longer in primary control", to prevent system rejection by the driver due to false warnings.
- The possibility of a cascade of warning is added for the same reason, i.e. to avoid the risk of driver rejection due to too frequent/false burdensome warning. The current proposal contains a high risk to provide a too burdensome warning, while the driver is still in primary control of the steering.
