

Proposal for the [01] series of amendments to UN Regulation No. 130 (Lane Departure Warning System)

The text reproduced below was prepared by the expert from Australia proposing the [01] series of amendments to United Nations Regulation No. 130 (Lane Departure Warning System). The proposed amendments intend to facilitate a consistent approach across all Contracting Parties for Emergency Lane Keeping Systems (ELKS) covering vehicles of category M₁ and N₁. Currently the European Union mandates ELKS through EU Regulation 2021/646, with the proposed amendments closely aligning with its' requirements. The modifications to the current text of the Regulation are marked in bold or strikethrough characters.

I. Proposal

Paragraph 1., amend to read:

1. Scope

This Regulation applies to the lane departure warning system of vehicles of categories **M₁**, **N₁**, **M₂**, **N₂**, **M₃** and **N₃**.¹

Insert a new paragraph 5.2.2.1., to read:

- 5.2.2.1. There must not be an appreciable time interval between each LDWS self-check (an integrated function that checks for a system failure on a continuous basis at least while the system is active), and subsequently there must not be a delay in illuminating the warning signal, in the case of an electrically detectable failure.

Insert a new paragraph 5.3.3., to read:

- 5.3.3. The manual deactivation of the full LDWS must not be possible with less than two deliberate actions, e.g. press and hold on a button, or select and confirm on menu option. It must be possible to easily suppress acoustic warnings of the LDWS, but such action must not at the same time deactivate the LDWS.

Insert a new paragraph 5.3.4. (and subparagraphs), to read:

5.3.4. LDWS Automatic deactivation

If the vehicle is equipped with a means to automatically deactivate the LDWS function, either partially or fully, for instance in situations such as off-road use, being towed, a trailer being hitched to the vehicle or the electronic stability control (ESC) being deactivated, the following conditions must apply as appropriate:

- 5.3.4.1 For testing, the vehicle manufacturer must provide a list of situations and corresponding criteria where the LDWS function is automatically deactivated which must be annexed to the test report.
- 5.3.4.2 The LDWS function must be automatically and fully reactivated as soon as the conditions that led to the automatic deactivation are not present anymore.

Insert a new paragraph 5.3.5. (and subparagraphs), to read:

5.3.5. Automatic suppression

5.3.5.1. For driver intended manoeuvres

For testing, the manufacturer must provide a documentation package which gives access to the basic design and logic of the system for detection of likely driver intended manoeuvres and automatic suppression of the LDWS. This package must include a list of parameters detected and a basic description of the method used to decide that the system should be suppressed, including limit values where possible. For the LDWS, the Technical Service must assess the documentation package to show that driver unintentional manoeuvres, within the scope of the lane keep test parameters (in particular lateral departure velocity), will not result in automatic suppression of the system.

5.3.5.2. Automatic suppression of the LDWS is also permitted in situations when other driver assist or automated steering functions, (i.e. Automatically commanded steering function, emergency steering function or automated lane keeping), are controlling the lateral movement of the vehicle or other safety related functions (i.e. that is capable of changing the dynamic behaviour of the vehicle such as AEBS, ESC, etc.) are intervening. These situations must be declared by the manufacturer.

Insert a new paragraph 5.4.1.2., to read:

5.4.1.2. When there is a lane keep intervention by a Corrective Steering Function that corrects lane departure as defined in paragraph 2.3.4.2 (c) of UN Regulation No. 79 [05] series of amendments, this shall be considered a haptic warning according to paragraph 5.4.1.

Insert a new paragraph 6.2.5., to read:

6.2.5. Pre-test conditioning

If requested by the vehicle manufacturer the vehicle can be driven to calibrate the sensor system up to a maximum of 100 km on a mixture of urban and rural roads with other traffic and roadside furniture.

Insert a new paragraph 6.5.3., to read:

6.5.3. In addition, the vehicle manufacturer must demonstrate to the satisfaction of the Technical Service that the requirements for the whole speed range and lateral departure velocity range are fulfilled. This may be achieved on the basis of appropriate documentation appended to the test report.

Insert a new paragraph 12. (and subparagraphs), to read:

12. Transitional provisions

12.1. Transitional Provisions applicable to the 01 series of amendments:

12.1.1. As from the official date of entry into force of the 01 series of amendments, no Contracting Party applying this Regulation shall refuse to grant or refuse to accept type approvals under this Regulation as amended by the 01 series of amendments.

12.1.2. As from [1 September 202X], Contracting Parties applying this Regulation shall not be obliged to accept type approvals to the preceding series of amendments, first issued on or after [1 XX 202X].

- 12.1.3. Until [1 September 202Y], Contracting Parties applying this Regulation shall accept type approvals to the preceding series of amendments, first issued before [1 XX 202X].
- 12.1.4. As from [1 September 202Y], Contracting Parties applying this Regulation shall not be obliged to accept type approvals issued to the preceding series of amendments to this Regulation."

II. Justification

1. This draft proposal for the [01] series of amendments to UN Regulation No. 130 (Lane Departure Warning System (LDWS)) accompanies the formal document submitted to the 19th session of GRVA by the expert from Australia proposing the 05 series of amendments to UN Regulation No. 79 (Steering equipment).
2. Australia is currently proposing to mandate the fitment of ELKS for vehicle categories equivalent to M₁ and N₁. A feasible option is to adopt Corrective Steering Function (CSF) requirements within UN Regulation No. 79 and Lane Departure Warning System (LDWS) requirements in UN Regulation No. 130 to cover ELKS requirements.
3. However, UN Regulation No. 130 currently does not apply to category M₁ and N₁ vehicles. Furthermore, Australia does not consider the requirements for LDWS adequate for light vehicles and prefers adopting similar requirements to those in EU Regulation 2021/646 (Emergency Lane Keeping Systems). This is because the current UN Regulation does not provide sufficient stringency in the performance requirements, such as the manual deactivation of the full LDWS must not be possible with less than two deliberate actions etc.
4. Therefore, the expert from Australia proposes to amend the scope and performance requirements of UN Regulation No. 130 to align with the requirements in EU Regulation 2021/646 and address concerns of stringency for light vehicles, or alternatively, implement a new UN regulation covering LDWS for light vehicles.
5. These amendments will provide a consistent approach across all Contracting Parties for the performance requirements and regulation of ELKS in vehicles of category M₁ and N₁.
6. Research published by the Monash University Accident Research Centre (MUARC) reported that 11 per cent of casualty crashes and 42 per cent of fatal crashes involving light vehicles in Australia (between 2013 to 2019) comprised of unintentional lane departure crashes occurring on sealed roads (without snow or ice) with speed limits of ≥ 70 km/h. Unintentional lane departure crashes included single-vehicle and multi-vehicle head-on and sideswipe crashes. Unintentional lane departure crashes represented 55 per cent of all road fatalities involving light vehicles, with this number increasing to 72 per cent at highway speeds of ≥ 100 km/h (Stuart et al. 2021).
7. The MUARC research demonstrated that ELKS is effective in reducing road trauma resulting from crashes involving unintentional lane departures. Results estimated a 9.09 per cent saving in total annual fatal crashes when 100 per cent of the light vehicle fleet is fitted with a lane keep assist system. This corresponded to a 11.9 per cent saving in total annual fatalities (Stuart et al. 2021).

III. References

Stuart Newstead, Linda Watson, Laurie Budd. 2021. The Potential Benefits of Lane Keep Assist Systems in Australian Light Vehicles. Melbourne: Monash University Accident Research Centre (MUARC). Accessed November 1, 2023.