

Proposal for amendments to UN Regulation No. 79

Note: This informal document intends to follow-up amendment proposal changes proposed in ECE/TRANS/WP.29/GRVA/2020/7 following further feedback.

I. Proposal

Paragraph 5.6.2.1.3., amend to read (insert a new provision):

"5.6.2.1.3. The system shall be designed so that excessive intervention of steering control is suppressed to ensure the steering operability by the driver and to avoid unexpected vehicle behaviour, during its operation. To ensure this, the following requirements shall be fulfilled:

- (a) The steering control effort necessary to override the directional control provided by the system shall not exceed 50 N;
- (b) The specified maximum lateral acceleration $a_{y_{\text{max}}}$ shall be within the limits as defined in the following table:

Table 1
For vehicles of Category M₁, N₁

<i>Speed range</i>	<i>10 - 60 km/h</i>	<i>> 60 - 100 km/h</i>	<i>> 100 - 130 km/h</i>	<i>> 130 km/h</i>
Maximum value for the specified maximum lateral acceleration	3 m/s ²	3 m/s ²	3 m/s ²	3 m/s ²
Minimum value for the specified maximum lateral acceleration	0 m/s ²	0.5 m/s ²	0.8 m/s ²	0.3 m/s ²

For vehicles of Category M₂, M₃, N₂, N₃

<i>Speed range</i>	<i>10 - 30 km/h</i>	<i>> 30 - 60 km/h</i>	<i>> 60 km/h</i>
Maximum value for the specified maximum lateral acceleration	2.5 m/s ²	2.5 m/s ²	2.5 m/s ²
Minimum value for the specified maximum lateral acceleration	0 m/s ²	0.3 m/s ²	0.5 m/s ²

- (c) The moving average over half a second of the lateral jerk generated by the system shall not exceed 5 m/s³.

(d) Special provision for vehicles of category M1

It is recognised that the function may be used in high-curvature environments (S-bends, cloverleaves, bends on rural roads, etc.) where the driver expects continued lane-keeping support at road-legal speeds. The manufacturer may declare control strategies (e.g. transient behaviour) for when the system would encounter lateral acceleration values exceeding the limits described in the table above due to changes in the radius of curvature of the bend.

In such an event, for vehicle speeds up to 80 kph, the system may exceed the $a_{y_{\text{max}}}$ limit of 3 m/s² for up to 2 seconds of time by not more than 40% in order to safely return to the maximum value defined in the table above.

This special provision shall be subject to Annex 6 and the manufacturer shall demonstrate, to the satisfaction of the Technical Service, the safety aspects of this special provision.

II. Justification

1. This informal document intends to amend to changes proposed in ECE/TRANS/WP.29/GRVA/2020/7 incorporating further feedback received.
2. Reference Document ECE-TRANS-WP29-1140e containing “Definitions on Automated Driving under WP.29 and the General Principles for developing a UN Regulation on automated vehicles”, adopted by WP.29 in March 2018 in the 174th session, recognizes the use of ACSF B1 systems in urban and interurban roads.
3. The B1 provisions of the regulation require further review in view of the radically different environments where the function may be expected to provide assistance to the driver. The proposal aims to attempt a first step in this direction by ensuring continued, expected and safe performance in environments that are challenging under the current B1 provisions, but can otherwise be safely handled by lane-keeping support systems elsewhere in the world. These systems show good and safe performance.
4. This proposal intends to allow the system to have a grace time in order to deal with unexpected changes in the radius of the curvature of the bend, by allowing the system to exceed the imposed $a_{y_{\text{max}}}$ limit of 3 m/s² by a maximum of 40% for up to 2 seconds. This will allow the system to offer consistent mitigation and slow down to return to the limits described in the table in a safe manner, avoiding unexpected and confusing behaviour for the driver and rear traffic.
5. The proposal also aims to improve the usability of the assisted or automated driving function, because the vehicle occupants would not feel discomfort due to an apparent drop in vehicle speed associated with a limited level of lateral acceleration under the current version of the Regulation. The proposal also aims to reduce driver and rear traffic confusion due to an apparent drop in vehicle speed.