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Working Party on Brakes and Running Gear

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Item 2(a) of the provisional agenda

MEETING OF THE GRRF WORKING GROUP ON ELECTRONIC STABILITY CONTROL

Development of the draft global technical regulation on Electronic Stability Control

Proposed amendments to draft global technical regulation on Electronic Stability Control

Submitted by the expert from
the International Organization of Motor Vehicle Manufacturers (OICA)

The text reproduced below was prepared by the expert from OICA in order to keep a high level of safety in case of Electronic Stability Control (ESC) system using a technology without direct sensors. The modifications to document ECE/TRANS/WP.29/GRRF/2007/14 are marked in **bold** characters.

A. PROPOSAL

Paragraph 5.7.1., amend to read (addition of a new subparagraph):

"5.7.1. System diagram identifying all ESC system hardware. The diagram **shall** identify what components are used to generate brake torques at each wheel, determine vehicle yaw rate, estimated side slip or the side slip derivative and driver steering inputs.

If these values are not directly measured, the evidence of the appropriate correlation with directly measured values under all driving conditions (especially driving on low μ) shall be shown."

B. JUSTIFICATION

Paragraph 6. "Discussion of Key Issues", subparagraph c. "General Requirements", item (1) "Basic System Operation" of the gtr preamble states (ECE/TRANS/WP.29/GRRF/2007/14, para. 52):

"In adopting the combination of ESC definitional and performance requirements set forth in this GTR, the Contracting Parties express their intention to spread the proven safety benefits of current ESC systems across the global light vehicle fleet as rapidly as possible."

The performance of current systems, especially in low adhesion situations which are not subject to the defined "sine with dwell" performance test, is essentially based on the quality of the yaw rate signal. All current systems use direct measuring yaw rate sensors.

As the value of yaw rate could in future also be determined by using wheel speed values and/or lateral acceleration values, there is a risk that this raw determination of the yaw rate value induces a poor correction of understeer and of oversteer in a lot of real world cases (high speed vehicle manoeuvres, low dynamic steering wheel manoeuvres, icy road). It is not possible to estimate what the real safety benefit of such a system will be. For some driving situations, for instance on low adhesion surfaces, a vehicle equipped with such ESC could even be worse than a vehicle without ESC when the wrong system interaction is done (for instance oversteer instead of understeer prevention). However, a system with such a raw determination of yaw rate may satisfy the "sine with dwell" steer performances criteria.

In consequence, the proposed additional paragraph which is an administrative requirement without any design restriction to the system is necessary in order to verify that the safety benefit of such future systems will be the same as that of current systems.

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