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agenda item 1.3.)

PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION No. 13

(Braking)

Transmitted by the Expert from Germany

Note: The text below was prepared by the expert from Germany, on behalf of the informal group on Periodical Technical Inspections (P.T.I). It consolidates the results as agreed by the experts of the P.T.I informal group in order to propose amendments to Regulation No. 13 concerning special requirements to be applied. It is based on the text of a document distributed without a symbol (informal document No. 22) during the forty-eighth session (TRANS/WP.29/GRRF/48, para. 31).

Note: This document is distributed to the Experts on Brakes and Running Gear only.

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A. PROPOSAL

Insert a new paragraph 2.30., to read:

"2.30. "Reference braking forces" means the braking forces of one axle generated at the circumference of the tyre on a roller brake tester, relative to brake actuator pressure and declared at the time of type approval."

Insert new paragraphs 5.1.4.6. to 5.1.4.7.1., to read:

"5.1.4.6. Reference braking forces

5.1.4.6.1. Reference braking forces shall be defined for vehicles with compressed-air operated brakes, for test made on a roller brake tester which conforms to the characteristics set out in the provisions of [draft ISO/TC22/SC2/WG6/N 508-Rev3, Annex A].

5.4.1.6.2. Reference braking forces are to be determined for a brake actuator pressure range from 1 bar to the pressure generated under Type 0 test-conditions for each axle. These shall be declared at the time of type approval by the manufacturer and, where appropriate, utilise data supplied by the axle/brake manufacturer and agreed in conjunction with the technical service. These data shall be made available, by the vehicle manufacturer, according to paragraph 5.1.4.5.1. above.

5.4.1.6.3. The declared reference braking forces shall ensure that the vehicle is capable of generating a braking rate equivalent to that defined in annex 4 of this Regulation for the relevant vehicle (50 per cent in the case of vehicles of category M₂, M₃, N₂, N₃, O₃ and O₄ except semi-trailers, 45 per cent in the case of semi-trailers), whenever the measured roller braking force, for each axle irrespective of load, must not be less than the reference braking force for a given brake actuator pressure within the declared operating pressure range */.

5.4.1.7. It shall be possible to verify, in a simple way, the correct operational status of those complex electronic systems which have control over braking. If special information is needed, this shall be made freely available.

5.4.1.7.1. At the time of type approval, the means implemented to protect against simple unauthorized modification, shall be confidentially outlined. In the case of trailers with limited warning signalling, this protection requirement is fulfilled when a secondary means of checking the correct operational status is available.

*/ For the purpose of periodic technical inspections, the minimum limit braking rate values defined for the whole vehicle may need adjustment to reflect national or international in-service requirements."

B. JUSTIFICATION

The tests for vehicles in use should be relatively simple, quick, inexpensive and reliable.

Re. paragraph 5.1.4.6.

There are different efficiency test procedures for the periodic technical inspections, although the measurements are normally carried out on a roller brake tester. On the roller brake tester it is necessary to measure braking forces per axle and to calculate the maximum braking rate. The vehicle is normally presented for the periodic technical inspection in the unladen or partially laden condition. In this case the test must be carried out with the highest applicable pressure to generate braking forces beneath the locking limit of the wheels.

Till now the measured braking forces have to be extrapolated to the design pressure and to the laden condition. For the extrapolation different methods such as the One-point or Two-point Measurement Procedure are used. Any inaccuracy of the test equipment or measurement errors are then extrapolated as well, resulting in an uncertainty. Only when the vehicle is presented in fully laden condition, can the braking rate be directly determined with the braking force.

With reference to braking forces, it is only necessary to measure the operating pressure and to achieve the relevant reference braking forces for the braked vehicle axle on a roller brake tester at any particular mass with which the vehicle is presented. If the pneumatic parts of the air or air-over-hydraulic braking system function correctly, it is then ensured that the prescribed braking performance will be achieved by the laden vehicle.

If for one axle the achieved braking forces are below the reference braking forces and for another axle above the reference braking forces, it is possible to determine by a simple calculation if the whole vehicle achieves the minimum prescribed braking performance.

The method is simple and a quick test procedure for motor vehicles and trailers, thus avoiding any further calculation and allowing a much better accuracy.

Re. paragraph 5.1.4.7.

Periodic Technical Inspection of vehicles in use offers the opportunity to examine the function of the braking system even when this is electronically controlled. This must be possible throughout the life of the vehicle as such checking is an essential means of controlling the safety of vehicles in use on the roads.

Whilst it is accepted that the actual braking performance will be measured under selected operating conditions on normal rolling roads, other complex electronically controlled functions which utilise braking, cannot be actually tested during a periodic technical inspection. Therefore, the manufacturer should allow a possibility to verify in a simple way the correct operational status. The means provided to protect this method of verification against

unauthorised modification will be declared to the technical service but will not be exposed in the public domain.
