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ECONOMIC COMMISSION FOR EUROPE

INLAND TRANSPORT COMMITTEE

Working Party on the Construction of Vehicles

**DRAFT SUPPLEMENT 4 TO THE 09 SERIES OF AMENDMENTS
TO REGULATION No. 13**

(Braking)

Note: The text reproduced below was adopted by the Administrative Committee (AC.1) of the amended 1958 Agreement at its eighth session, following the recommendation by the Working Party at its one-hundred-and-fourteenth session. It is based on document TRANS/WP.29/1998/3, as corrected (TRANS/WP.29/609, paras. 58 and 111).

Insert a new paragraph 2.22., to read:

"2.22. 'Simultaneous lockup of the front and rear wheels' refers to the condition when the time interval between the first occurrence of lockup of the last (second) wheel on the rear axle and the first occurrence of lockup on the last (second) wheel on the front axle is less than 0.1 second."

Paragraph 5.1.1.5. (of Supplement 2 to the 09 series, see document TRANS/WP.29/505), renumber as paragraph 5.1.4.4. (see below).

Paragraph 5.1.1.6. (of Supplement 2 to the 09 series, see document TRANS/WP.29/505), renumber as paragraph 5.1.1.5.

Insert the following new paragraphs 5.1.4. to 5.1.4.4.2., to read:

- 5.1.4. Provisions for the periodic technical inspection of braking systems.
- 5.1.4.1. The braking system shall be so designed that the components of the braking system of which the function and efficiency is influenced by wear, can easily be checked.
- 5.1.4.2. For the purpose of determining the in-use braking forces of each axle of the vehicle, with a compressed-air braking system, air pressure test connections are required:
 - 5.1.4.2.1. In each independent circuit of the braking system, at the closest readily accessible position to the brake cylinder which is the least favourably placed as far as the response time described in Annex 6 is concerned.
 - 5.1.4.2.2. In a braking system which incorporates a pressure modulation device as referred to in paragraph 7.2. of annex 10, located in the pressure line upstream and downstream of this device at the closest accessible position. If this device is pneumatically controlled an additional test connection is required to simulate the laden condition. Where no such device is fitted, a single pressure test connection, equivalent to the downstream connector mentioned above, shall be provided. These test connections shall be so located as to be easily accessible from the ground or within the vehicle.
 - 5.1.4.2.3. At the closest readily accessible position to the least favourably placed energy storage device within the meaning of paragraph 2.4. of annex 7, Section A.
 - 5.1.4.2.4. In each independent circuit of the braking system so it is possible to check the input and output pressure of the complete transmission line.
 - 5.1.4.2.5. The pressure test connections shall comply with clause 4 of ISO Standard 3583: 1984.
- 5.1.4.3. The accessibility of required pressure test connections shall not be obstructed by modifications and assembly of accessories or the vehicle body.

Note: Insert a (new) paragraph 5.1.4.4., to read the text of former paragraph 5.1.1.5. (see the renumbering above).

5.1.4.5. Data for braking systems:

5.1.4.5.1. The data of the compressed-air braking system for the functional and efficiency test must be specified at the vehicle in a visible position in indelible form, or made freely available in another way (e.g. handbook, electronic data recorder).

5.1.4.5.2. for vehicles equipped with compressed-air braking systems at least the following data are required:

Pneumatic characteristic data:

compressor/unloader valve ⁽¹⁾	Max. cut-out pressure = bar	Min. cut-in pressure = bar
Four-circuit protection valve	Static closing pressure = bar	
Trailer control valve or relay emergency valve, as appropriate	Corresponding delivery pressure for a control pressure of 3.0 bar = bar	
Minimum design pressure in the service braking system for calculation ^{(1) (2)}		

	Axle(s)		
Brake cylinder type ⁽³⁾ Service / Parking	/	/	/
Maximum stroke ⁽³⁾ s_{max} = mm			
Lever length ⁽³⁾ = mm			

- Notes:
- ⁽¹⁾ Not applicable for trailers;
 - ⁽²⁾ When different from minimum cut-in pressure;
 - ⁽³⁾ Only applicable for trailers."

Insert a new paragraph 5.2.1.2.5., to read:

"5.2.1.2.5. Without prejudice to the requirements of paragraph 5.1.2.3. of this Regulation, the service braking system and the parking braking system may use common components in their transmission(s), provided that in the event of a failure in any part of the transmission(s) the requirements for secondary braking are still ensured;"

Paragraph 5.2.1.2.5. (former), renumber as paragraph 5.2.1.2.6. and in its text the reference to "paragraph 5.2.1.2.7. below" amend to read "paragraph 5.2.1.2.8. below".

Paragraphs 5.2.1.2.6. and 5.2.1.2.6.1. (former), renumber as paragraphs 5.2.1.2.7. and 5.2.1.2.7.1.

Paragraph 5.2.1.2.6.2., renumber as paragraph 5.2.1.2.7.2., and add at the end the following text:

"..... In each service braking circuit in at least one of the air reservoirs a device for draining and exhausting is required in an adequate and easily accessible position."

Paragraph 5.2.1.2.7., renumber as paragraph 5.2.1.2.8.

Insert a new paragraph 5.2.2.4.3., to read:

"5.2.2.4.3. Shall contain in at least one of the air reservoirs a device for draining and exhausting in an adequate and easily accessible position."

Paragraph 5.2.2.12., add at the end of the following text:

"..... An easily accessible pressure test connection is required downstream of the coupling head of the control line."

Annex 6, paragraphs 4. to 4.2., should be deleted.

Annex 7, Section A,

Insert a new paragraph 1.1.2., to read:

"1.1.2. It must be possible to easily identify the reservoirs of the different circuits."

Paragraphs 1.1.2. and 1.1.3. (former), renumber as paragraphs 1.1.3. and 1.1.4.

Paragraphs 3. to 3.2., should be deleted.

Annex 10.

Paragraph 3.1.2., amend to read:

"3.1.2. For all states of load of the vehicle, the adhesion utilization curve of the rear axle shall not be situated above that for the front axle:"

Insert a new paragraph 3.1.4. (heading), to read:

"3.1.4. Verification of the requirements of paragraphs 3.1.1. and 3.1.2.

Paragraphs 3.1.4. to 3.1.4.2. (former), renumber as paragraphs 3.1.4.1. to 3.1.4.1.2.

Paragraph 3.1.4.3. (former), renumber as paragraph 3.1.4.5.

Insert new paragraphs 3.1.4.2. to 3.1.4.4., to read:

"3.1.4.2. If it is not possible, for vehicles with (permanent) all-wheel drive, to carry out the mathematical verification pursuant to paragraph 3.1.4.1., the manufacturer may instead verify by means of a wheel lock sequence test that, for all braking rates

between 0.15 and 0.8, lockup of the front wheels occurs either simultaneously with or before the lockup of the rear wheels.

- 3.1.4.3. Procedure to verify the requirements of paragraph 3.1.4.2.
- 3.1.4.3.1. The wheel lock sequence test shall be conducted on road surfaces with a coefficient of adhesion of not more than 0.3 and of about 0.8 (dry road) from the initial test speeds specified in paragraph 3.1.4.3.2.
- 3.1.4.3.2. Test speeds:
- 60 km/h, but not exceeding $0.8 v_{\max}$ for decelerations on low coefficient of friction road surfaces;
- 80 km/h, but not exceeding v_{\max} for decelerations on high coefficient of friction road surfaces.
- 3.1.4.3.3. The pedal force applied may exceed the permissible actuation forces pursuant to annex 4, paragraph 2.1.1.
- 3.1.4.3.4. Pedal force is applied and increased such that the second wheel on the vehicle will reach lockup between 0.5 and 1 s after initiating the brake application, until lockup of both wheels on one axle occurs (additional wheels may also lock during the test, e.g. in the case of simultaneous lockup).
- 3.1.4.4. The tests prescribed in paragraph 3.1.4.2. shall be carried out twice on each road surface. If the result of one test fails, a third, hence decisive test shall be carried out."

Annex 10, paragraphs 8. to 8.2., should be deleted.
