



**Economic and Social  
Council**

Distr.  
GENERAL

ECE/TRANS/WP.29/GRRF/2009/11/Corr.1  
19 December 2008

ENGLISH ONLY

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**ECONOMIC COMMISSION FOR EUROPE**

**INLAND TRANSPORT COMMITTEE**

World Forum for Harmonization of Vehicle Regulations

Working Party on Brakes and Running Gear

Sixty-fifth session

Geneva, 2-6 February 2009

Item 3(d) of the provisional agenda

REGULATIONS Nos. 13 AND 13-H (Braking)

Trailer parking brake

Proposal for an amendment to Regulation No. 13

Submitted by the expert from the United Kingdom\*

Corrigendum

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\* In accordance with the programme of work of the Inland Transport Committee for 2006-2010 (ECE/TRANS/166/Add.1, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance performance of vehicles. The present document is submitted in conformity with that mandate.

Page 3

Line 1: For 8.5.2. read 8.2.2.

Line 4: For 8.1. read 8.1.1.

Paragraphs 8.1.1. to 8.1.4., renumber as paragraphs. 8.1.2. to 8.1.5.

Page 4

Paragraphs 8.1.5. to 8.1.5.2., renumber as paragraphs 8.1.6. to 8.1.6.2.

Page 7

For the existing part B substitute

**"B. JUSTIFICATION**

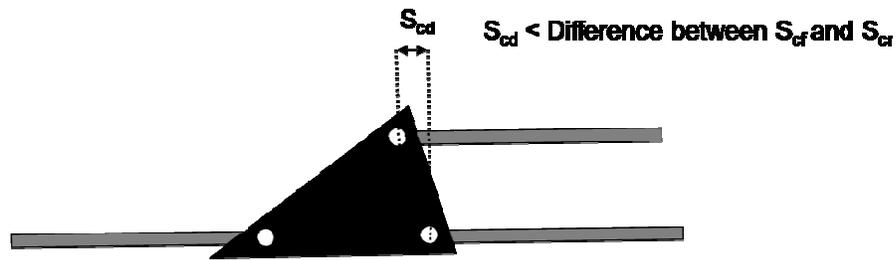
This proposal outlines two test procedures (dynamic or calculation) which will confirm that the parking brake system will apply appropriate forces to either side.

The general requirements of Annex 12 to Regulation No. 13, specifically paragraph 3.5., states that auto-reverse devices should not adversely affect the parking brake performance when facing up a gradient. However, the current approval test for an inertia braking system does not completely assess the parking brake system to ensure that the brakes on each side are capable of providing their appropriate share of the braking force required to hold the trailer on an 18 per cent gradient.

The design of the auto-reverse mechanism includes a small hump in the profile of the shoe web. This feature is designed to prevent unnecessary operation of the auto-reverse function during normal forward driving (such as when shunt occurs between the vehicle and trailer). This means that there is a small threshold to overcome to initially invoke the mechanism. Once the hump is passed, there is a reduction in the level of force required to maintain the auto-reverse function, however providing both brakes go into auto-reverse mode together the brake force available is sufficient to hold the trailer on the 18 per cent gradient.

Problems arise when the geometry of the compensator permits only one brake to go into auto-reverse mode leaving the other brake to contribute little or no braking effort. The resultant cause is that the trailer can pivot around the one locked wheel. This proposed simple physical test will ensure that each brake will contribute sufficient force to ensure that it remains stable even when subjected to side forces.

It is possible for a trailer braking system to comply with Annex 12, but to fail to operate correctly under certain circumstances. If the compensator is not designed correctly, then most or all of the tension is taken by only one of the rear cables and the other brake is no longer properly applied.



**Compensator geometry provides limited articulation. Due to the difference in travel required in each cable, applied tension is only transferred to one side**

Figure 1: Inappropriate design of compensator

If the compensator design includes appropriate geometry, then both cables are subject to the same tension. Figure 2 shows the park brake operation of the compensator under various situations.

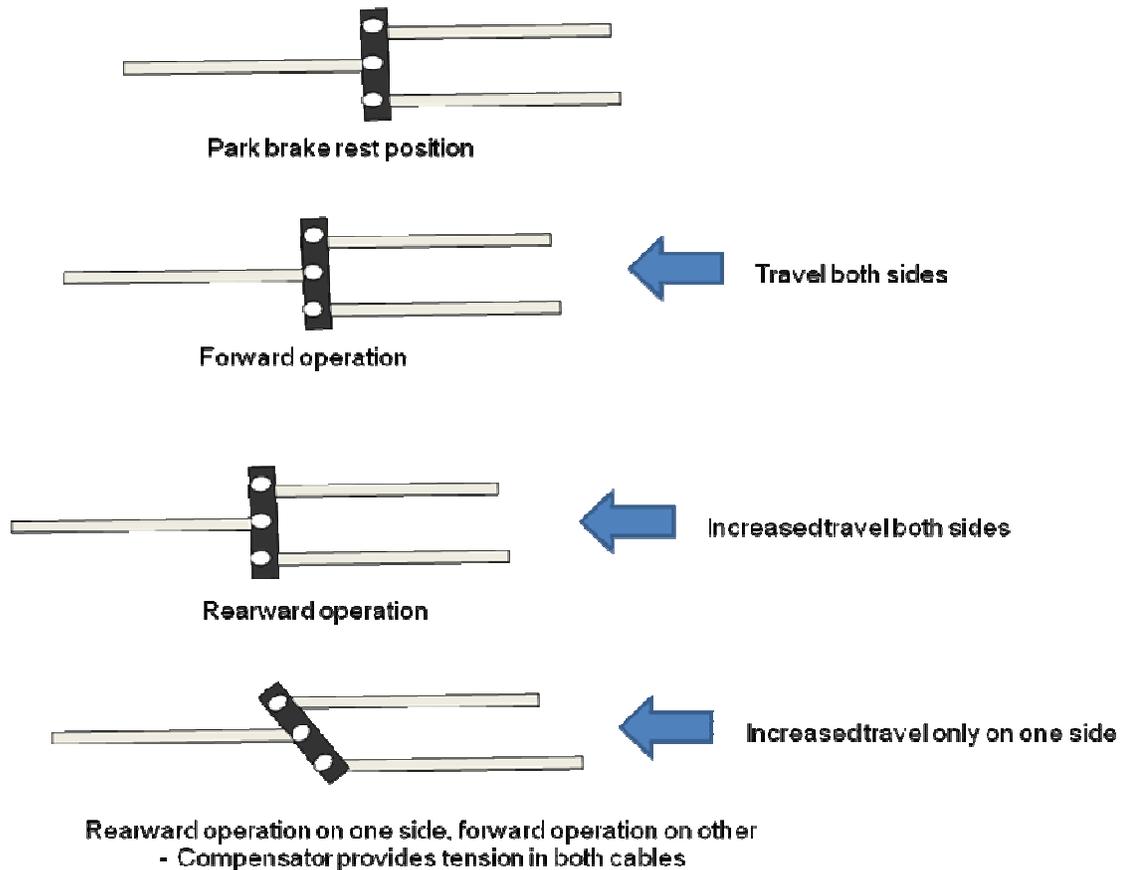


Figure 2: Compensator operation

When the park brake is applied, the compensator applies tension to both rear cables. The compensator normally operates with either both brakes working in the forward or both in the reverse direction. However, if one wheel is stopped from moving by an external force (e.g. held against the kerb), then one brake can remain in the forward operating direction and the other will move into the reverse mode. This results in different travels in the left and right cables. The compensator must tilt to ensure that both cables are still held under the appropriate tension. This is shown in the last diagram in Figure 2."

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