

Proposal for amendments to Regulation No. 13 (Trailer braking)

Proposal to amend the word "bogie" to "axle group" and replace a footnote (3 times) with a definition and clarify the term "close-coupled bogie"

A. PROPOSAL

Insert a new paragraph 2.37., to read:

"2.37. "Axle group" means multiple axles where the axle spread between one axle and its adjacent axle is equal to or less than 2.0 m. Where the axle spread between one axle and its adjacent axle is greater than 2.0 m, each individual axle shall be considered as an independent axle group."

Annex 10, paragraph 1.3.1., delete the reference to the following footnote and the footnote.

~~"In the case of multiple axles, where the axle spread between one axle and its adjacent axle is greater than 2.0 m, each individual axle shall be considered as an independent axle group."~~

Annex 21, paragraphs 2.1.1. and 2.2.1., delete the references to the following footnote (x2 in each paragraph) and the footnote.

~~"In the case of multiple axles, where the axle spread between one axle and its adjacent axle is greater than 2.0 m, each individual axle shall be considered as an independent axle group."~~

Annex 2, paragraph 15.3., amend to read:

"15.3. Actuation differential (if any) within **bogie axle group**:"

Annex 13, paragraph 3.1.3., amend to read:

"3.1.3. Category 3 anti-lock system

A vehicle equipped with a category 3 anti-lock system shall meet all the relevant requirements of this Annex, except those of Paragraphs 5.3.4. and 5.3.5. On such vehicles, any individual axle (or **bogie axle group**) which does not include at least one directly controlled wheel must fulfil the conditions of adhesion utilization and the wheel-locking sequence of Annex 10 to this Regulation, with regard to the braking rate and the load respectively. These requirements may be checked on high- and low-adhesion road surfaces (about 0.8 and 0.3 maximum) by modulating the service braking control force."

Annex 13, Appendix 2, paragraph 1.4., amend to read:

“1.4. For power-driven vehicles equipped with three axles, ~~only the axle not associated with a close-coupled bogie will be used to establish~~ **any axes that are interconnected by either suspension components and thereby react to weight transfer under braking or driveline may be disregarded in establishing a** k value for the vehicle. ^{1/}”

Annex 19, paragraph 5.4.1.5.1., amend to read:

“5.4.1.5.1. When the axle ~~bogie or axle group~~ passes from a high adhesion surface (k_H) to a low adhesion surface (k_L) where $k_H \geq 0.5$ and $k_H / k_L \geq 2$, with a control pressure at the coupling head of 650 kPa (6.5 bar), the directly controlled wheels shall not lock. The running speed and the instant of applying the trailer brakes is so calculated that with the anti-lock braking system full cycling on the high adhesion surface, the passage from one surface to the other being made at approximately 80 km/h and at 40 km/h.”

Annex 19, Appendix 5, paragraph 2.6., amend to read:

“2.6. Recommendations on differential brake input torque (if any) in relation to the ABS configuration and trailer ~~bogie~~ **axle group.**”

Annex 19, Appendix 6, paragraph 4.4., amend to read:

“4.4. Differential(s) in brake input torque within the trailer ~~bogie~~ **axle group:**”

Annex 20, paragraphs 3.2.1.2. and 7.2.1.4., amend to read:

“3.2.1.2. Any difference in the brake input torque between one axle and another within a ~~bogie~~ **an axle group** of the "subject trailer" shall not differ from that of the "reference trailer".”

“7.2.1.4. Differentials in brake input torque within a bogie an axle group	Only approved differentials (if any) permitted”
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B. JUSTIFICATION

In reviewing document ECE/TRANS/WP.29/GRRF/2010/11 and preparing ECE/TRANS/WP.29/GRRF/2010/11/Rev.1, it became apparent that there was a possibility of misunderstanding arising with regard to the term “bogie”.

The term “bogie” is of railway origin and refers to a framework with wheels and suspension which supports the engine/carriage/goods wagon body. In road vehicles, the front axle of a full trailer can easily be understood to be a bogie, as can a twin axle steel leaf spring arrangement in which each axle is attached to the end of the leaf spring and the centre is connected to the chassis. However, in the case of air suspension, it is less clear. For example in the case of 3 axles independently mounted directly to the chassis, is this a 3 axle bogie or just 3 axles?

In addition to the term “bogie” the term “axle group” is used in a number of footnotes to clarify when a multiple axle arrangement can be considered as a group or as an individual axle.

As both of these terms cover the relationship of multiple axles to each other and the footnote is basically an axle group definition, it is proposed to standardize on the term “axle group” and replace 3 identical footnotes with a specific “axle group” definition.

In Annex 13, Appendix 2, paragraph 1.4., there is a variant on the term bogie – “close-coupled bogie”. While this term would have been meaningful when it was introduced into ECE Regulation No. 13, it provides no guidance today in understanding why there is an exception. If an axle is directly influenced in terms of wheel loading or wheel rotation by another axle it is probable, but not certain, that it will not provide a true k value. Therefore, the option of using or excluding interconnected axles is introduced, and the term “close coupled bogie” is replaced with a descriptive wording that provides an understanding as to why there is an option, in addition to specifying the option.

The creation of an axle group definition will also remove the need to have an axle group footnote in the proposed amendment document ECE/TRANS/WP.29/GRRF/2010/11/Rev1 and have a footnote referring to a footnote.
