

EVSC05-19

Comparison of old and new ECE-Regulation No. 13 - Annex 13

Mandatory minimum requirement for **category 1** (motor vehicles) and **category B** (trailers)

	Today - 2005	1979
Title Annex 13	Test requirements for vehicles fitted with anti-lock systems	Requirements applicable to tests for braking systems equipped with anti-lock devices (wheel-lock preventers)
Cat. 1	<p>A vehicle equipped with a category 1 anti-lock system <u>shall meet all the relevant requirements of annex 13.</u></p> <p>ECE-R13/5.2.1.22 [M2, M3, N2, N3]</p> <p>[Mandatory ABS on certain M3 and N3 motor vehicles since 1991 - 88/194/EEC - Annex I/ 2.2.1.22]</p>	no mandatory ABS category defined
Split-μ (performance & stability)	✓	-
Cat. B	<p>A trailer equipped with a category B anti lock system shall meet all the relevant requirements of <u>annex 13, except paragraph 6.3.2.</u></p> <p>6.3.2 Split requirements</p> $\frac{Z_{RALH}}{\varepsilon_H} \geq 0.5 \text{ and } \frac{Z_{RALH}}{Z_{RALL}} \geq$ <p>ECE-R13/5.2.2.13 [O3 and O4]</p> <p>[Mandatory ABS on O4 trailers since 1991 - 88/194/EEC - Annex I/ 2.2.2.13]</p>	no mandatory ABS category defined
Split-μ (stability)	✓	-
Axle sensoring [in the case of trailers]	<u>sensors</u> on all wheels of a controlled axle is required	at an axle only <u>one sensor</u> may be fitted

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Warning signal sequence and “memory function” requirement	✓	-
Utilisation of adhesion [ε] - motor vehicles	on high <u>and low</u> adhesion surfaces unladen & laden	<u>only on high</u> adhesion surfaces only unladen
Utilisation of adhesion [ε] - trailers	only on high adhesion surfaces unladen	dto.
ε determination	<p><u>front and rear</u> axles considered</p> <p>App.2: The coefficient of adhesion k_M [or k_R] shall be determined by weighting with the dynamic axle loads.</p> $k = \frac{k_f \cdot F_{fdyn} + k_r \cdot F_{rdyn}}{P \cdot g}$ $\varepsilon = \frac{Z_{AL}}{k}$ <p><u>Summary:</u> Whole anti-lock system is considered!</p>	<p><u>only one</u> axle is considered</p> $\varepsilon = \frac{Z_{max}}{k} \quad \text{motor vehicle}$ <p>$Z_m \Rightarrow$ see below Z_0</p> $\varepsilon = \frac{Z_1}{Z_0} \quad \text{trailer}$ <p>Z_0 is the maximum braking ratio obtained by braking one axle without locking the wheels, the anti-lock device being disconnected.</p> <p>Z_1 is the braking ratio obtained by braking the same axle with the anti-lock device in operation.</p> <p><u>Summary:</u> Divided anti-lock system is considered!</p>

	Today - 2005	1979
Energy consumption test surface for trailers	<p><u>still artificial old test conditions</u> * - test track with a surface having a high coefficient of adhe- sion</p> <p>* Test with <u>unladen</u> vehi- cle with proportioning /load-sensing valve held in the "<u>laden</u>" position</p> <p>This test condition does reflect the real word condi- tions!</p>	dto.
High to Low transi- tion ⇒ Trailer (an- nexes XIV or 19):	✓	-
Low to High transi- tion Motor vehicles (an- nexes X or 13 and trailers (annexes XIV or 19)	✓	-

Personal comment

- In order to make the introduction of the 1979 ABS regulations for the homologation of trailer anti-lock systems at that time acceptable only a high- μ -test surface was required due to lack of suitable low- μ -surfaces.
- With respect of introducing new stability systems: It is better to start with requirements which are not 100% perfect than not to start at all!
- In getting more experience by assessing and testing new stability systems we have a better chance to further develop the initial regulations than never to have the chance to gain this experience at all!

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