



Federal Ministry
of Transport, Building
and Urban Development

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(75th GRRF, 17-19 September 2013
agenda item 3(e))

Automatic adjustors on wheel-brakes for class O1 and O2 trailers

GRRF
75th session
17-19 September 2013

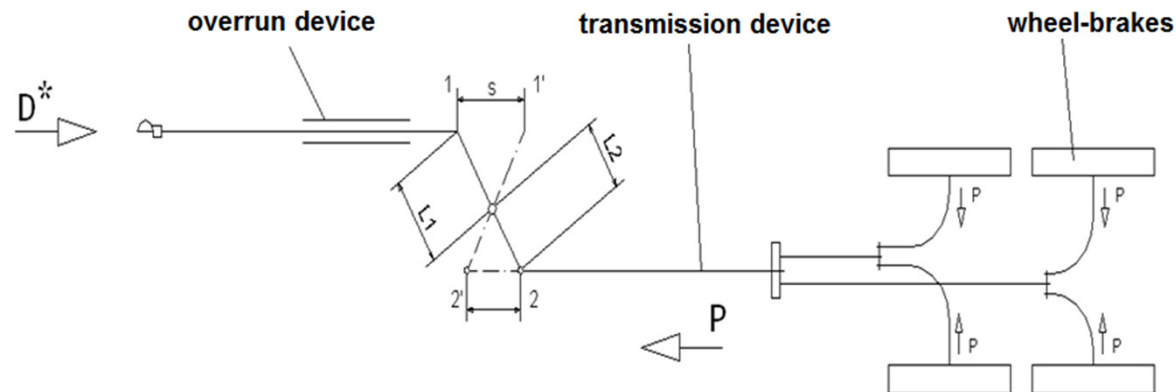


- Motivation
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- Functioning of an autoreverse-mechanism
- Benefits
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- Target / Justification



Motivation

- No changes in the braking-systems of O1/O2 trailers in the last 30 years
- Most times a mechanical transmission of the actuation forces to the wheel-brakes is used with no automatic adjustment of the wheel-brakes
- Without regular manual adjustment, the brakes work less effective



Legislation

Directive **71/320/EEC** incl. all amendments, annex I, paragraph 2.2.2.8.1

and **ECE R13** - Rev.7 - Amend.2 - paragraph 5.2.2.8.1 say:

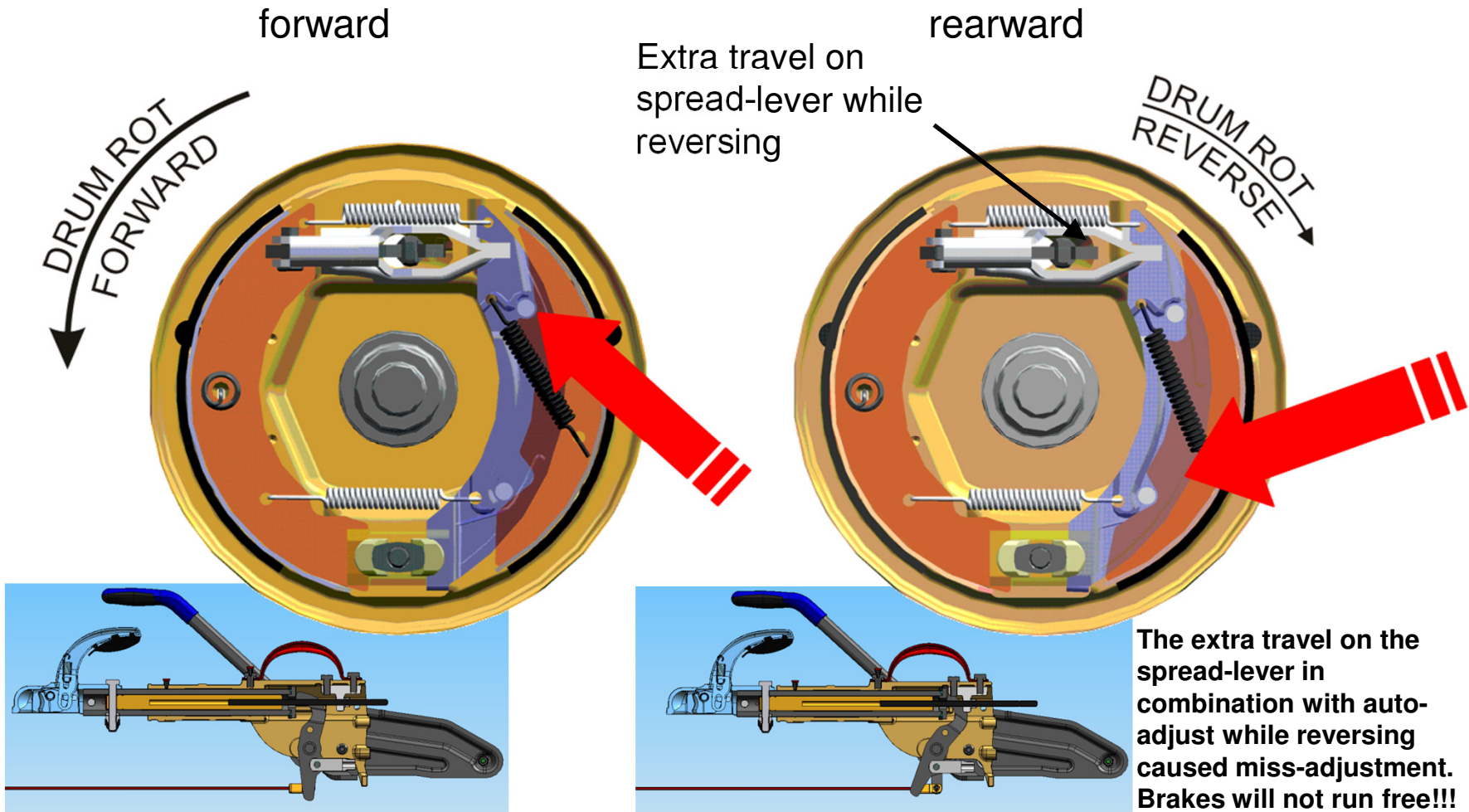
„Wear adjustment shall be automatic for the service brakes. However, the fitting of automatic adjustment devices is optional for vehicles of categories O1 and O2. ...“

Reason:

Up till now it was not possible to join an automatic adjustment device with the mandatory automatic reverse mechanism in the brakes without getting incorrect adjustment while reversing the trailer.



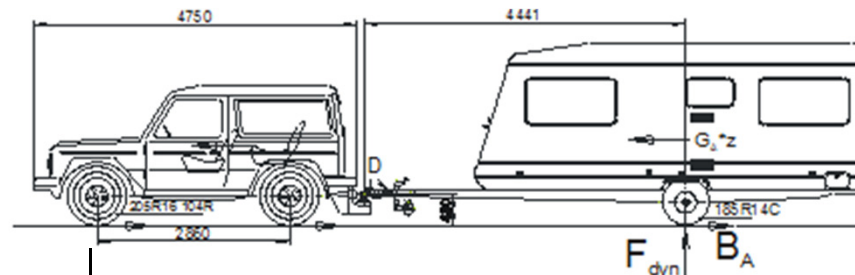
Functioning of an autoreverse-mechanism



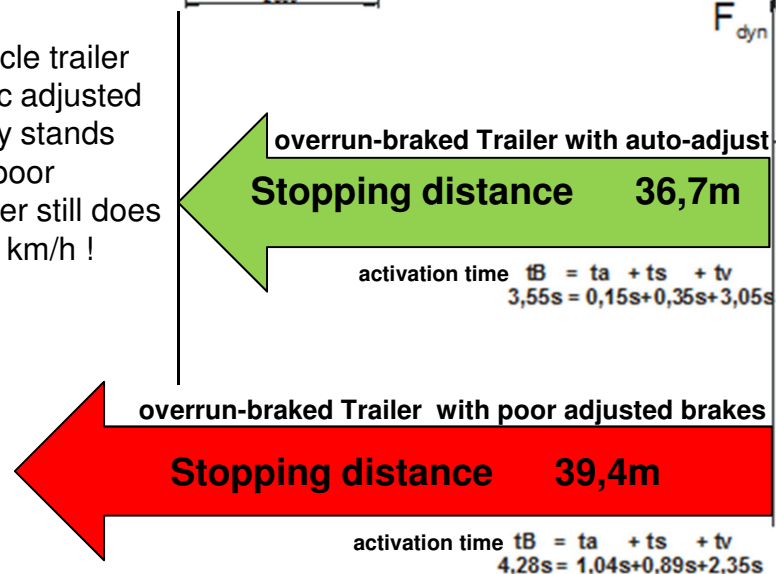


Benefits

- **Shortening of the stopping distance due to the use of an automatic adjustment device in the wheel-brakes => Safety increase**



All the time, when the vehicle trailer combination with automatic adjusted brakes in the trailer already stands still, the combination with poor adjusted brakes in the trailer still does have a velocity of appr. 17 km/h !



Test masses:

Mk=2400kg

ma=1400kg

S=80kg

C=1320kg

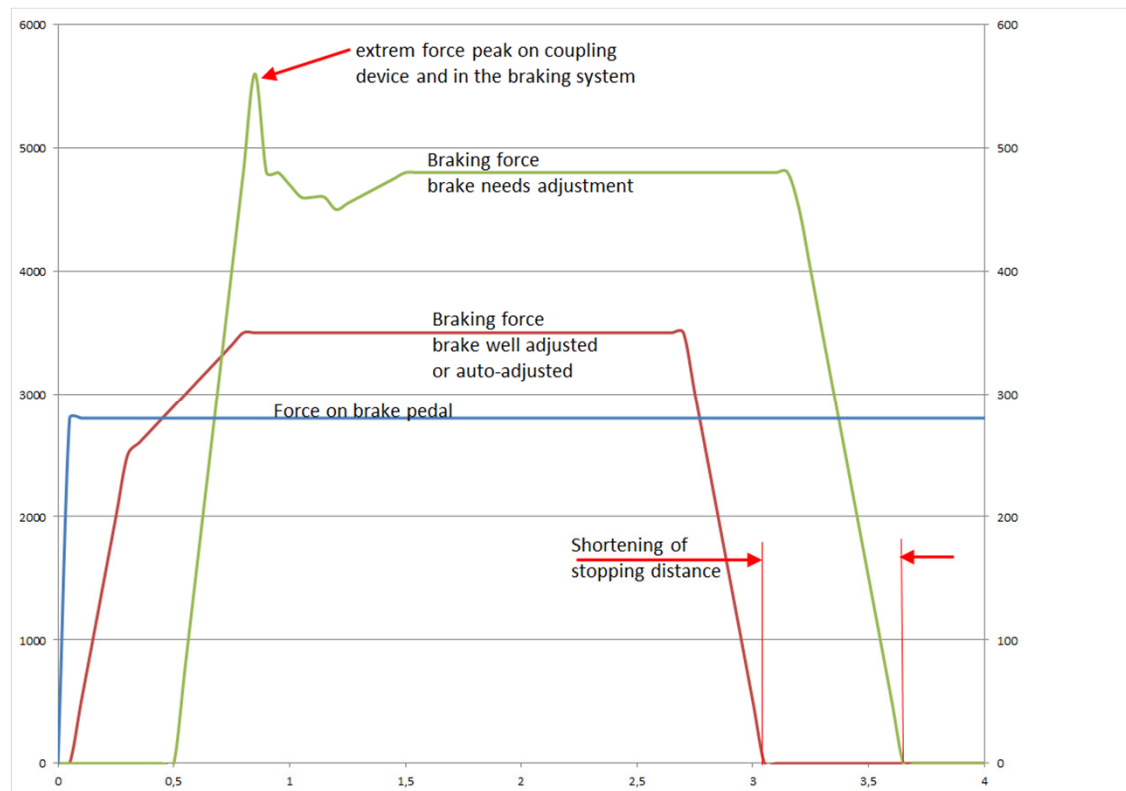
Testing speed:

V1=60 km/h



Benefits

- **Avoidance of force peaks on coupling device and in the braking system**

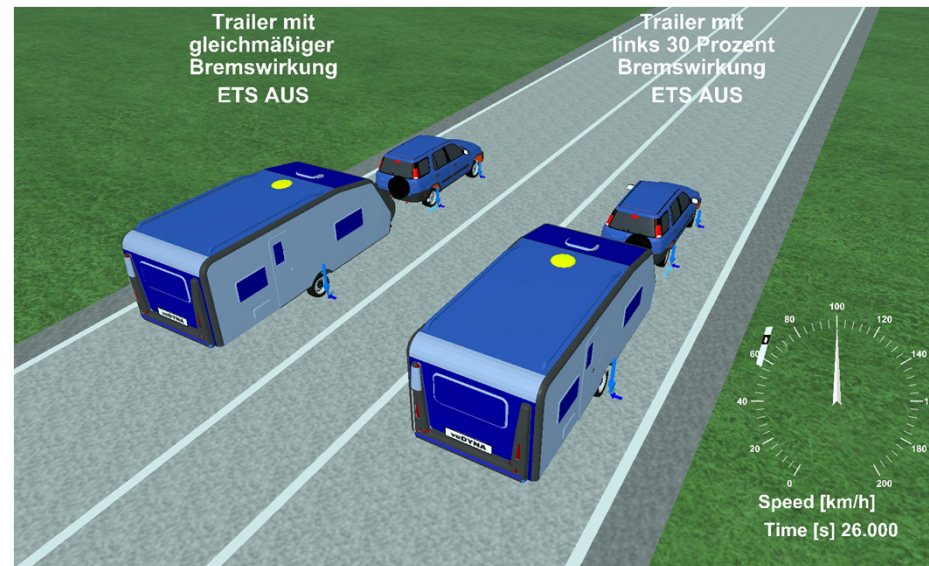


Benefits

- **Benefit on electronic stabilization systems for trailers and caravans**

Nowadays there are different electronic stabilization systems for overrun-braked trailers and caravans on the market, which apply the wheel-brakes when an instability has been detected.

In combination with poor adjusted brakes they need more valuable time to generate the stabilizing effect and so lose some of their power.

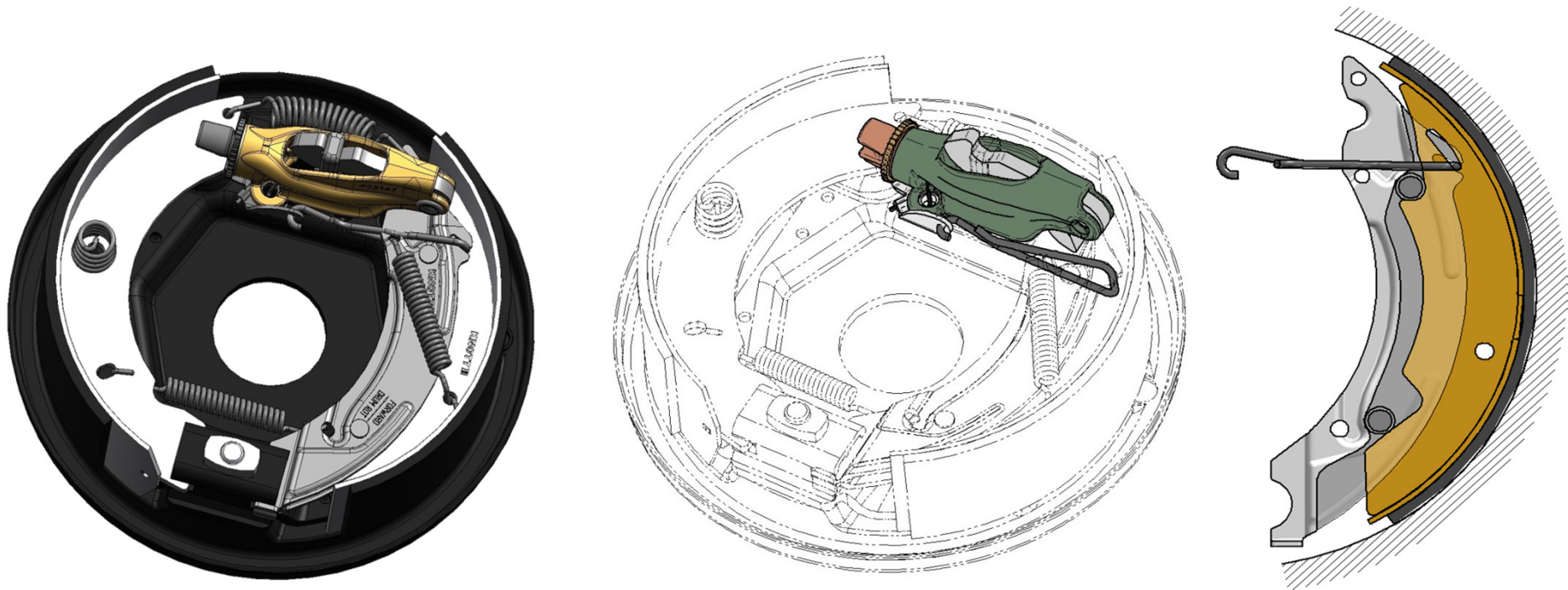


Video animation



State of the art

Manufacturers of brakes for O1 and O2 trailers should be able to have brakes with an integrated automatic adjustment device and an autoreverse mechanism in their product range very soon or they already have such products on the market.



e.g. Brake with automatic adjustment and automatic reverse (already available on the market)

Target / Justification

Amendment of ECE R13 - Paragraph 5.2.2.8.1

Deletion of sentence: *„However, the fitting of automatic adjustment devices is optional for vehicles of categories O1 and O2.“*

Justification:

The shown results of the tests clearly proved, that with automatic adjusted wheel-brakes the slack in the braking system can be removed permanently and therefore:

- stopping distances can be shortened significantly
- exaggerated peaks of the force on the drawbar can be avoided
- electronic stabilization systems react quicker and have their maximum power



Target / Justification

- For trailers of class O3 and O4, automatic adjustment is mandatory for many years now.
 - In the meantime, the technical problems when joining an autoreverse-system with automatic adjustment device in wheel-brakes for O1 and O2 trailers have been solved at all major brake manufacturers.
 - With permanently well adjusted brakes, the stopping distances can be significantly shortened and accidents can be avoided or mitigated.
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- When taking all these facts into account, an exemption for brakes for O1 and O2 trailers seems not longer to be appropriate.
 - Proposal of Germany:
Amendment of R-13; automatic adjustment of the service brakes should be mandatory also for trailers of class O1 and O2 till 01.01.2018.

Thank you for your attention!

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