



**Economic and Social  
Council**

Distr.  
GENERAL

ECE/TRANS/WP.29/GRB/2009/4  
22 June 2009

Original: ENGLISH  
ENGLISH AND FRENCH ONLY

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ECONOMIC COMMISSION FOR EUROPE

INLAND TRANSPORT COMMITTEE

World Forum for Harmonization of Vehicle Regulations

Working Party on Noise

Fiftieth session

Geneva, 1 - 3 September 2009

Item 3(c) of the provisional agenda

REGULATION No. 51  
(Noise of M and N categories of vehicles)

Proposal for amendments to Regulation No. 51

Submitted by the expert from the Netherlands<sup>\*/</sup>

The proposal reproduced below was prepared by the expert from the Netherlands. It aims at amending the measurement method B in Regulation No. 51. The proposed text is the result of the advice (informal document No. GRB-49-07) of the Working Party on Noise (GRB) informal group on Additional Sound Emissions Provisions (ASEP) in order to improve the effectiveness of ASEP. The modifications to the current text of the Regulation are marked in **bold** characters or as strikethrough.

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<sup>\*/</sup> 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.

A. PROPOSAL

Annex 10, paragraphs 3.1.2.1.4.1. and 3.1.2.1.4.2., amend to read:

"3.1.2.1.4.1. Vehicles with manual transmission, automatic transmissions, adaptive transmissions or CVT's tested with locked gear ratios

The following conditions for selection of gear ratios are possible:

- (a) If one specific gear ratio gives an acceleration in a tolerance band of  $\pm 5$  per cent of the reference acceleration  $a_{\text{wot ref}}$ , ~~not exceeding  $2.0 \text{ m/s}^2$~~ , test with that gear ratio.
- (b) If none of the gear ratios give the required acceleration, then choose a gear ratio  $i$ , with an acceleration higher and a gear ratio  $i+1$ , with an acceleration lower than the reference acceleration. ~~If the acceleration value in gear ratio  $i$  does not exceed  $2.0 \text{ m/s}^2$ , use both gear ratios for the test.~~ The weighting ratio in relation to the reference acceleration  $a_{\text{wot ref}}$  is calculated by:
 
$$k = (a_{\text{wot ref}} - a_{\text{wot } (i+1)}) / (a_{\text{wot } (i)} - a_{\text{wot } (i+1)})$$
- ~~(c) if the acceleration value of gear ratio  $i$  exceeds  $2.0 \text{ m/s}^2$ , the first gear ratio shall be used that gives an acceleration below  $2.0 \text{ m/s}^2$  unless gear ratio  $i+1$  provides acceleration less than  $a_{\text{urban}}$ . In this case, two gears,  $i$  and  $i+1$  shall be used, including the gear  $i$  with acceleration exceeding  $2.0 \text{ m/s}^2$ . In other cases, no other gear shall be used. The achieved acceleration  $a_{\text{wot test}}$  during the test shall be used for the calculation of the part power factor  $k_p$  instead of  $a_{\text{wot ref}}$ .~~
- (c) If the vehicle has a transmission in which there is only one selection for the gear ratio the acceleration test is carried out in this vehicle gear selection. The achieved acceleration is then used for the calculation of the part power factor  $k_p$  instead of  $a_{\text{wot ref}}$ .
- (d) If rated engine speed is exceeded in a gear ratio before the vehicle passes BB' the next higher gear shall be used.

3.1.2.1.4.2. Vehicles with automatic transmission, adaptive transmissions and CVT's tested with non-locked gear ratios:

The gear selector position for full automatic operation shall be used.

The acceleration value  $a_{\text{wot test}}$  shall be calculated as defined in paragraph 3.1.2.1.2.2.

The test may then include a gear change to a lower range and a higher acceleration. A gear change to a higher range and a lower acceleration is not allowed. A gear shifting to a gear ratio which is not used in urban traffic shall be avoided.

Therefore, it is permitted to establish and use electronic or mechanical devices, including alternate gear selector positions, to prevent a downshift to a gear ratio which is typically not used at the specified test condition in urban traffic.

The achieved acceleration  $a_{\text{wot test}}$  shall be greater or equal to  $a_{\text{urban}}$ .

~~If possible, the manufacturer shall take measures to avoid an acceleration value  $a_{\text{wot test}}$  greater than  $2.0 \text{ m/s}^2$ .~~

The achieved acceleration  $a_{\text{wot test}}$  is then used for the calculation of the partial power factor  $k_p$  (see paragraph 3.1.2.1.3.) instead  $a_{\text{wot ref}}$ ."

## B. JUSTIFICATION

The informal group on ASEP advised GRB in its February 2009 session to remove the  $2 \text{ m/s}^2$  boundary from the new type approval measurement method (GRB-49-07). This will have little effect on the type approval result, but a significant increase of the effectiveness of ASEP.

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