

Amendments to ECE/TRANS/WP.29/GRB/2011/2

The text below was prepared by the Chair of the Working Party on Noise (GRB) to incorporate collected comments and proposals for amendments to Additional Sound Emission Provisions (ASEP) as provided in ECE/TRANS/WP.29/2011/2 for consideration at the 53rd GRB session.

I. Proposal

Insert in paragraph 6.2.3., to read:

“6.2.3. Additional sound emission provisions

... intended especially for non-lockable transmissions with variable gear ratios (CVT).

Vehicle of category N1 are exempted from ASEP if one of the following conditions is fulfilled:

- **The driver's R point is either forward of the front axle or longitudinally rearwards of the front axle transverse centre line by a maximum of 1100 mm.**
- **The engine capacity is not exceeding 660 ccm and the power-to-mass ratio PMR calculated by using the maximum authorized vehicle mass is not exceeding 35.**
- **The paxload is at least 850 kg and the power-to-mass ratio PMR calculated by using the maximum authorized vehicle mass is not exceeding 40.**

The additional sound emission provisions are ...”

Insert new paragraph 11.5., to read:

“11.5. For the first five years after the official entry into force of the 03 series of amendments to this Regulation vehicles with a serial hybrid drive train which have an additional combustion engine with no mechanical coupling to the power train are excluded from the requirements of paragraph 6.2.3.”

Modify Annex 10, to read:

"Annex 10

Measuring method to evaluate compliance with the additional sound emission provisions

~~Only applicable for vehicles of categories M₁ and N₁~~

Only applicable for vehicles as specified in paragraph 6.2.3 of the main body

...“

Modify paragraph 2.3 of Annex 10, to read:

“2.3. Control range
...
gears $k \leq$ highest gear measured in Annex 3,
~~k not first gear~~
 $k \leq$ gear ratio i+1 as determined in Annex 3,
k not first and not reverse gear
If the vehicle, ...”

Modify paragraph 3.2 of Annex 10, to read:

~~“3.2. Slope of the regression line for each gear
The sound measurements shall be evaluated as a function of engine speed.
The slope for the further calculation is 5 dB/1000 min⁻¹.~~

3.2. Slope of the regression line for each gear

The sound measurements shall be evaluated as function of engine speed according to paragraph 3.2.1.

3.2.1 Calculation of the slope of the regression line for each gear

The linear regression line is calculated using the anchor point and the four correlated additional measurements.

$$Slope_k = \frac{\sum_{j=1}^5 (n_j - \bar{n})(L_i - \bar{L})}{\sum_{j=1}^5 (n_j - \bar{n})^2} \quad (\text{in dB/1000 rpm})$$

$$\text{With } \bar{L} = \frac{1}{5} \sum_{j=1}^5 L_j \quad \text{and} \quad \bar{n} = \frac{1}{5} \sum_{j=1}^5 n_j ;$$

where n_j = engine speed measured at line BB’

3.2.2 Slope of the regression line for each gear

The Slope_k of a particular gear for the further calculation is the derived result of the calculation in paragraph 3.2.1 rounded to the first decimal place, but not higher than 5 dB/1000 rpm.”

Modify paragraph 5. of Annex 10 and its subparagraphs, to read:

“5. ~~Reference value~~ **Reference sound assessment**

~~The reference value is [...].~~

The reference sound is assessed at a single point in one discrete gear, simulating an acceleration condition starting with an entry speed at v_{aa} equal to 50 km/h and assuming an exit speed at v_{bb} equal to 61 km/h. The

sound compliance at this point can either be calculated using the results of paragraph 3.2.2 and the specification below or be evaluated by direct measurement using the gear as specified below.

- 5.1. The determination of gear k is as follows:
- $k = 3$ for all manual transmission and for **lockable** automatic transmission with up to 5 gears;
- $k = 4$ for **lockable** automatic transmission with 6 or more gears.
- ~~In the case of a non-lockable automatic gear box, the gear k shall be chosen so that V_{BB} is nearest to 61 km/h.~~
- If no discrete gears are available, e.g. for non-locked CVTs, the gear ratio for further calculation shall be determined from the acceleration test result in Annex 3 using the reported engine speed and vehicle speed at line BB’.**
- 5.2. Determination of reference engine speed $n_{ref,k}$
- ~~Reference vehicle engine speed, $n_{ref,k}$, shall be determined by the manufacturer at V_{ref} with the respective gear ratio k and $V_{ref} = 61$ km/h.~~
- The reference engine speed, $n_{ref,k}$, shall be calculated using the gear ratio of gear k at the reference speed of $v_{ref} = 61$ km/h.**
- 5.3. Calculation of the reference sound L_{ref} ~~with~~
- ...
- For vehicles fitted with a manual gear box having more than four forward gears and equipped with an engine developing a maximum power greater than 140 kW (UNECE) and having a maximum-power/maximum-mass ratio greater than 75 kW/t, L_{ref} shall be ~~increased by 3 dB(A)~~ **less than or equal to 79 dB(A).**
- For vehicles fitted with an automatic gear box having more than four forward gears and equipped with an engine developing a maximum power greater than 140 kW (UNECE) and having a maximum-power/maximum-mass ratio greater than 75 kW/t, L_{ref} shall be ~~increased by 2 dB(A)~~ **less than or equal to 78 dB(A)."**

II. Justification

1. This document was prepared by the Chair of GRB to introduce collected comments and proposals for amendments to the Chair’s approach on ASEP (ECE/TRANS/WP.29/GRB/2011/2).