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**ECONOMIC COMMISSION FOR EUROPE**

**INLAND TRANSPORT COMMITTEE**

**World Forum for Harmonization of Vehicle Regulations**

One-hundred-and-forty-second session  
Geneva, 26-29 June 2007  
Item 4.2.5. of the provisional agenda

**1998 AGREEMENT**

Consideration of draft amendments to existing Regulations

Proposal for Supplement 6 to the 02 series of amendments to Regulation No. 51  
(Noise emissions)

Submitted by the Working Party on Noise

The text reproduced below was adopted by the Working Party on Noise (GRB) at its forty-fifth session. It is based on ECE/TRANS/WP.29/GRB/2007/3, not amended. It is submitted to the World Forum for Harmonization of Vehicle Regulations (WP.29) and to the Administrative Committee (AC.1) for consideration (ECE/TRANS/WP.29/GRB/43, para. 13).

The text of the Regulation,

Paragraph 5.4.1., footnote 2/, amend to read:

"2/ 1 for Germany, 2 for France, 3 for Italy, 4 for the Netherlands, 5 for Sweden, 6 for Belgium, 7 for Hungary, 8 for the Czech Republic, 9 for Spain, 10 for Serbia, 11 for the United Kingdom, 12 for Austria, 13 for Luxembourg, 14 for Switzerland, 15 (vacant), 16 for Norway, 17 for Finland, 18 for Denmark, 19 for Romania, 20 for Poland, 21 for Portugal, 22 for the Russian Federation, 23 for Greece, 24 for Ireland, 25 for Croatia, 26 for Slovenia, 27 for Slovakia, 28 for Belarus, 29 for Estonia, 30 (vacant), 31 for Bosnia and Herzegovina, 32 for Latvia, 33 (vacant), 34 for Bulgaria, 35 (vacant), 36 for Lithuania, 37 for Turkey, 38 (vacant), 39 for Azerbaijan, 40 for The former Yugoslav Republic of Macedonia, 41 (vacant), 42 for the European Community (Approvals are granted by its Member States using their respective ECE symbol), 43 for Japan, 44 (vacant), 45 for Australia, 46 for Ukraine, 47 for South Africa, 48 for New Zealand, 49 for Cyprus, 50 for Malta, 51 for the Republic of Korea, 52 for Malaysia, 53 for Thailand, 54 and 55 (vacant) and 56 for Montenegro. Subsequent numbers shall be assigned to other countries in the chronological order in which they ratify or accede to the Agreement Concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these Prescriptions, and the numbers thus assigned shall be communicated by the Secretary-General of the United Nations to the Contracting Parties to the Agreement."

Annex 3,

Paragraph 3.2.3., amend to read:

"3.2.3. Test site – local conditions (see appendix, figures 2 and 3a to 3d)"

Paragraphs 3.2.5.3.1. to 3.2.5.3.1.5., amend to read:

"3.2.5.3.1. Microphone orientation

3.2.5.3.1.1. The microphone shall be located at a distance of 0.5 m  $\pm$  0.01 m from the reference point of the exhaust pipe defined in figure 2 and at an angle of 45 ° ( $\pm$  5 °) to the vertical plane containing the flow axis of the pipe termination. The microphone shall be at the height of the reference point, but not less than 0.2 m from the ground surface. The reference axis of the microphone shall lie in a plane parallel to the ground surface and shall be directed towards the reference point on the exhaust outlet.

If two microphone positions are possible, the location farthest laterally from the vehicle longitudinal centreline shall be used.

If the flow axis of the exhaust outlet pipe is at 90 ° to the vehicle longitudinal centreline, the microphone shall be located at the point, which is furthest from the engine.

- 3.2.5.3.1.2. For vehicles having an exhaust provided with outlets spaced more than 0.3 m apart, one measurement is made for each outlet as if it were the only one, and the highest sound pressure level shall be noted.
- 3.2.5.3.1.3. If a vehicle has two or more exhaust outlets spaced less than 0.3 m apart and connected to a single silencer, only one measurement shall be made. The microphone shall be located relative to the outlet farthest from the vehicle longitudinal centreline, or when such outlet does not exist, to the outlet, which is highest above the ground.
- 3.2.5.3.1.4. For vehicles with a vertical exhaust (e.g. commercial vehicles) the microphone shall be placed at the height of the exhaust outlet. Its axis shall be vertical and oriented upwards. It shall be placed at a distance of  $0.5 \text{ m} \pm 0.01 \text{ m}$  from the exhaust pipe reference point as defined in figure 2, but never less than 0.2 m from the side of the vehicle nearest to the exhaust.
- 3.2.5.3.1.5. For vehicles, where the reference point of the exhaust pipe is not accessible, or located under the vehicle body, as shown in figures 3b and 3c, because of the presence of obstacles which form part of the vehicle (e.g. spare wheel, fuel tank, battery compartment), the microphone shall be located at least 0.2 m from the nearest obstacle, including the vehicle body, and its axis of maximum sensitivity shall face the exhaust outlet from the position least concealed by the above mentioned obstacles.

When several positions are possible, as shown in figure 3c, the microphone position giving the lowest value of  $d_1$  or  $d_2$  shall be used.

Note: Figures 3a to 3d show examples of the position of the microphone, depending on the location of the exhaust pipe."

Paragraph 3.2.5.3.1.6., should be deleted.

Paragraphs 3.2.5.3.2.1. and 3.2.5.3.2.2., amend to read:

"3.2.5.3.2.1. Target engine speed

The target engine speed is defined as:

- (a) 75 per cent of the engine speed  $S$  for vehicles with a rated engine speed  $\leq 5,000 \text{ min}^{-1}$ ;
- (b)  $3,750 \text{ min}^{-1}$  for vehicles with a rated engine speed above  $5,000 \text{ min}^{-1}$  and below  $7,500 \text{ min}^{-1}$ ;
- (c) 50 per cent of the engine speed  $S$  for vehicles with a rated engine speed  $\geq 7,500 \text{ min}^{-1}$ .

If the vehicle cannot reach the engine speed as stated above, the target engine speed shall be 5 per cent below the maximum possible engine speed for that stationary test.

3.2.5.3.2.2. Test procedure

The engine speed shall be gradually increased from idle to the target engine speed, not exceeding the tolerance band of  $\pm 5$  per cent of the target engine speed, and held constant. Then the throttle control shall be rapidly released and the engine speed shall be returned to idle. The sound pressure level shall be measured during a period consisting of constant engine speed of at least one second and throughout the entire deceleration period. The maximum sound level meter reading shall be taken as the test value."

Insert a new paragraph 3.2.5.3.2.3., to read:

"3.2.5.3.2.3. Test validation

The measurement shall be regarded as valid if the test engine speed does not deviate from the target engine speed by more than  $\pm 5$  per cent for at least one second."

Paragraphs 3.2.6. to 3.2.6.2., amend to read:

"3.2.6. Results

3.2.6.1. Measurements shall be made according to the microphone location(s) described in paragraph 3.2.5.3.1.

3.2.6.2. The maximum A-weighted sound pressure level indicated during the test shall be noted, mathematically rounded to the first significant figure before the decimal place."

Insert new paragraphs 3.2.6.3. to 3.2.6.5., to read:

"3.2.6.3. The test shall be repeated until three consecutive measurements at each outlet are obtained, which are within 2 dB of each other, allowing for deletion of non valid results.

3.2.6.4. The result for a given outlet is the arithmetic average of the three valid measurements, mathematically rounded as given above and shall be reported as the A-weighted sound pressure level  $L_{Arep}$ .

3.2.6.5. For vehicles equipped with multiple gas outlets, the sound pressure level reported  $L_{Arep}$  shall be for the outlet having the highest average sound pressure level."

Annex 3 - Appendix, insert a new figure 2 to read:

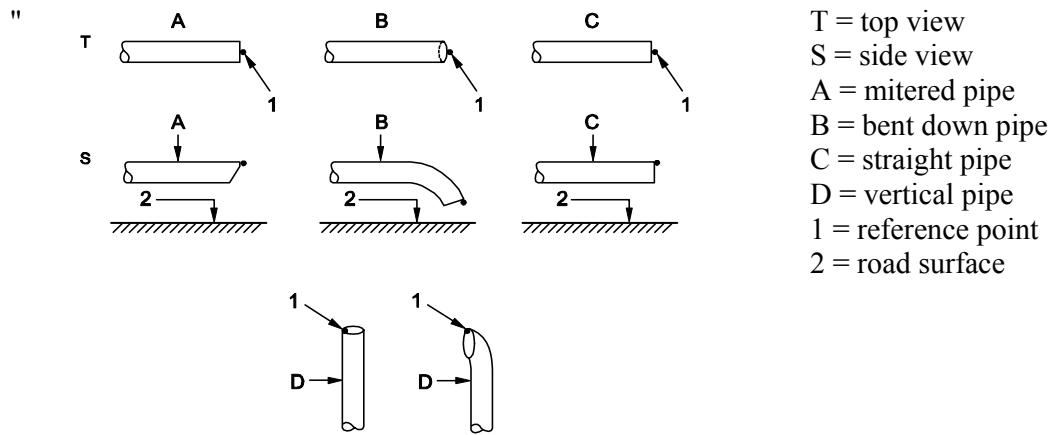


Figure 2: Reference point"

Annex 3 - Appendix, figure 2 (former), renumber as figures 3a to 3d and amend to read:

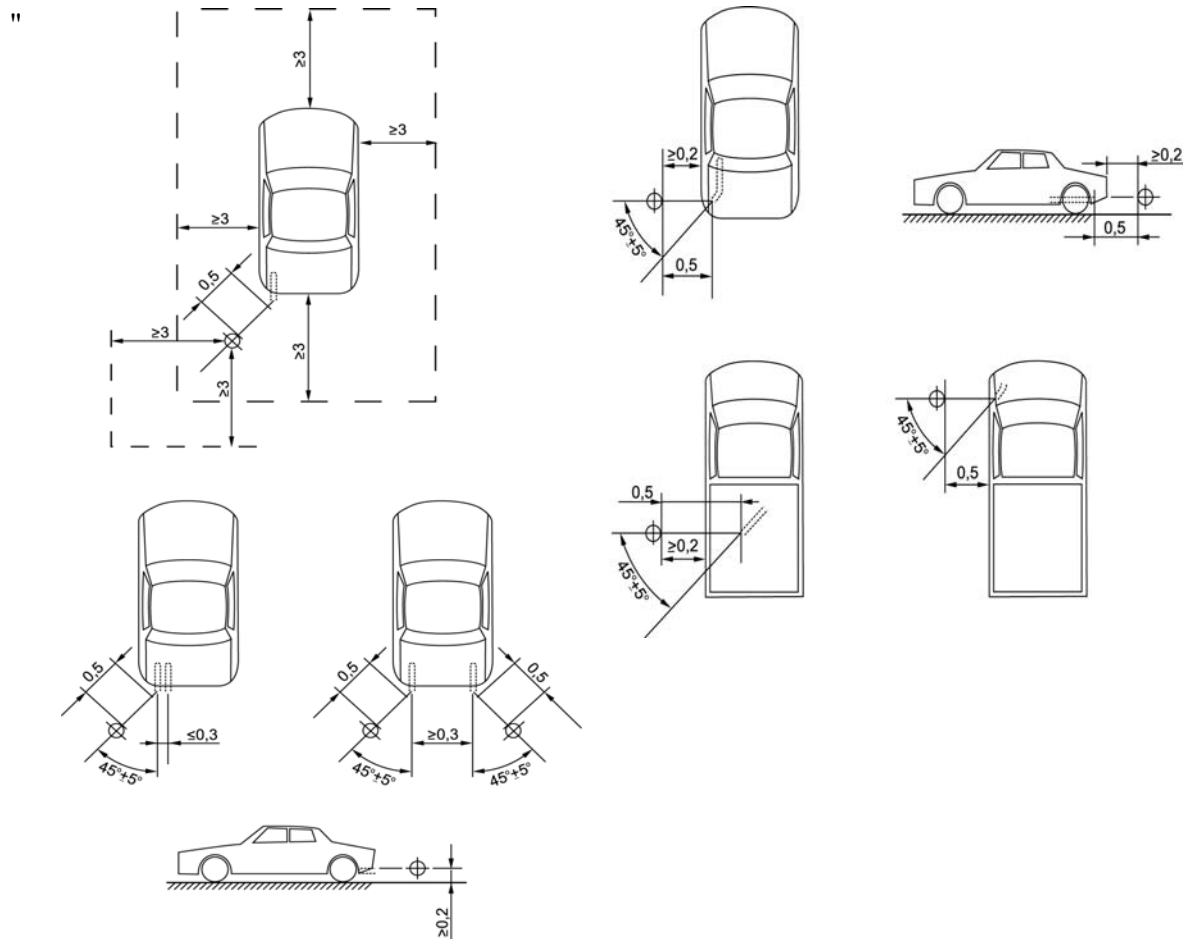


Figure 3a

Figure 3b

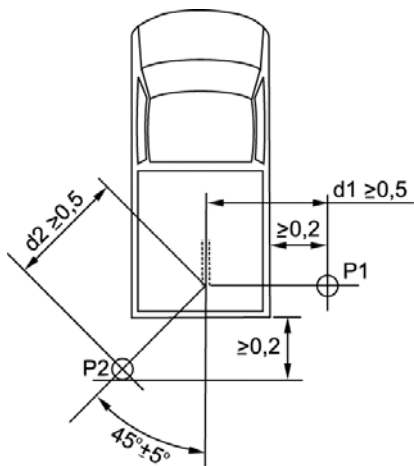


Figure 3c

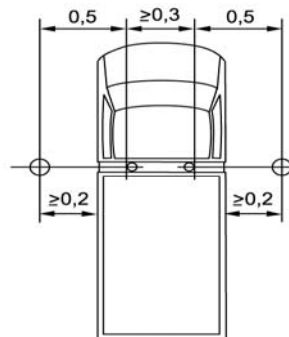
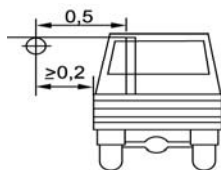


Figure 3d

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