

## Measurement of the sound emitted by stationary vehicles

(Proposal for draft amendments to Annex 3 to Regulation No. 51)

### A. BACKGROUND

As requested by GRB, ISO has revised the ISO 5130:1982 standard in order to reflect the technical developments of motor vehicles. These changes reflect the development of engine protection systems, which require engine speed targets to be modified, as well as the different exhaust tailpipe locations. The technical changes, related to the engine speed, had been earlier communicated to GRB and accepted in principle.

ISO has presently circulated ISO 5130 within ISO for approval as a Draft International Standard (DIS).

ISO proposes to align the text of Regulation No. 51 with the text of approved ISO/DIS 5130. The formal proposal for amendments to Regulation No. 51 will be submitted to GRB for consideration at forty-fourth session in September 2006. At that time, the balloting process on the DIS should be completed and the approved text would be made available to GRB.

### B.1. PROPOSAL

Paragraph 3.2.3., amend to read:

"3.2.3. Test site – local conditions (see appendix, figure 2)"

### C.1. JUSTIFICATION

The local conditions for determination of the reference point are indicated in the figures of Annex 3, and as shown below, ISO proposes to introduce new figures 1, 2a, 2b, 2c and 2d.

### B.2. PROPOSAL

Paragraph 3.2.5.3.1.6., amend to read:

"3.2.5.3.1.6. For vehicles, **where the reference point of the exhaust pipe is not accessible, or located under the vehicle body, as shown in figure 2b and 2c, 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 must face the exhaust outlet from the position least concealed by the above mentioned obstacles.**

**When several positions are possible, as shown in figure 2c, the microphone position giving the lowest value of d1 or d2 shall be used.**

Figures from 2a to 2d show examples of the position of the microphone, depending on the location of the exhaust pipe."

### C.2. JUSTIFICATION

The paragraph needs to be included to allow measurements of vehicles (typically N category vehicles), which does not allow a microphone position according to the specifications in paragraph 3.2.5.3.1.2.

### B.3. PROPOSAL

Annex 3 – Appendix, amend to read:

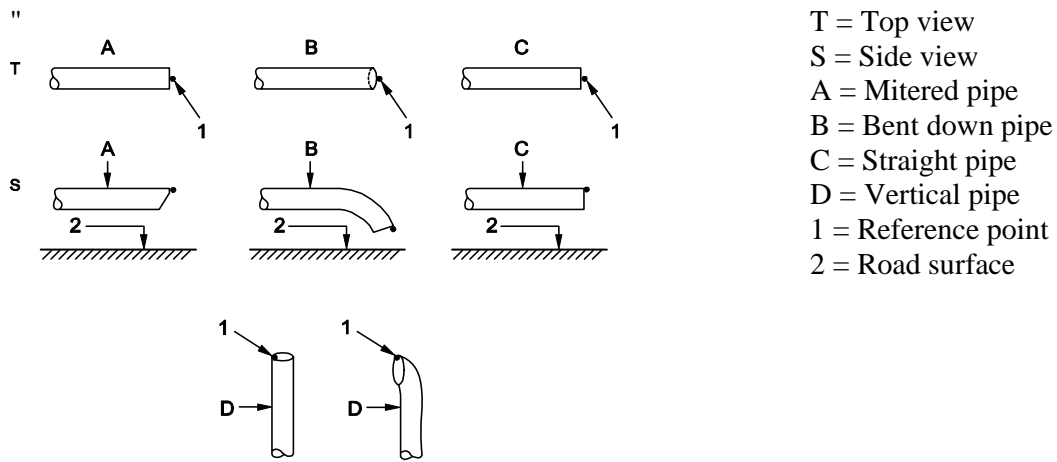
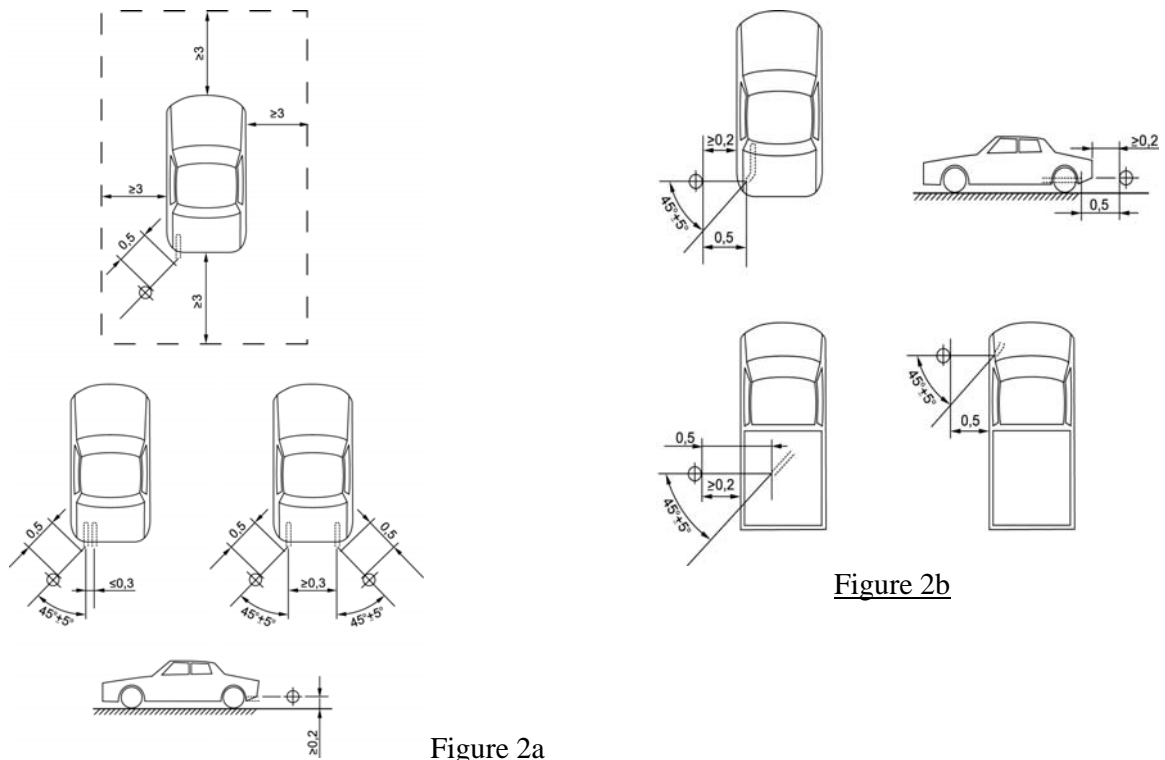


Figure 1: Reference point



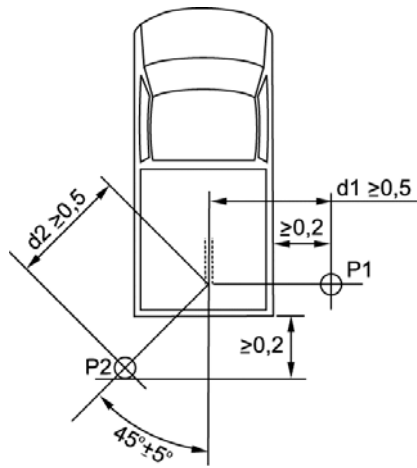


Figure 2c

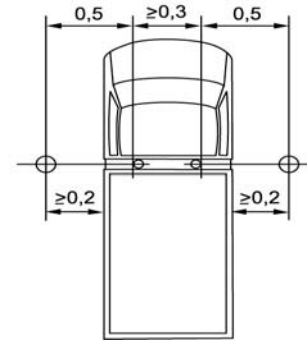
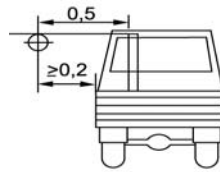


Figure 2d

#### B.4. PROPOSAL

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.**
- 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."**

#### C.4. JUSTIFICATION

The wording in this paragraph is proposed changed to bring it in line with the ISO/DIS 5130 document.

From a technical point of view, averaging the three valid results provides improved repeatability and lower variation of the final reported sound pressure level.

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