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Road vehicles — Sound signalling devices — Tests after mounting on vehicle

*Véhicules routiers — Avertisseurs sonores — Essais après montage sur
le véhicule*

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ISO 6969:1999(E)

Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 6969 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 3, *Electrical and electronic equipment*.

This second edition cancels and replaces the first edition (ISO 6969:1981), of which it constitutes a technical revision.

Annex A of this International Standard is for information only.

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Road vehicles — Sound signalling devices — Tests after mounting on vehicle

1 Scope

This International Standard specifies the testing of sound signalling devices in accordance with ISO 512, to be carried out after mounting on the vehicle.

It is applicable exclusively to the testing of acoustical properties of sound signalling devices mounted on new types of road vehicles.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 512:1979, *Road vehicles — Sound signalling devices — Technical specifications*.

IEC 60051 (all parts), *Direct acting indicating analogue electrical measuring instruments and their accessories*.

IEC 60651:1979, *Sound level meters*.

3 Measuring apparatus

The measurement of sound pressure levels shall be made using a sound level meter in accordance with IEC 60651.

When a device for protection against wind is used, its effect on the measuring accuracy shall be taken into account according to the indications of the manufacturer.

The electrical measurements shall be made using instruments of the class 0,5 as specified in IEC 60051.

The measurements of length shall be made with a maximum error of 0,1 m.

4 Expression of results

The results of the measurements of the sound pressure levels shall be in relation to 2×10^{-5} Pa (N/m²), weighted in accordance with curve A as specified in IEC 60651, and the results expressed in decibels (A).

5 Test conditions

5.1 Test site and ambient conditions

The vehicle shall be placed on an open site, such as an open space of 50 m radius of which the central part is intended for the execution of the measurements, which shall be practically horizontal over at least 20 m radius, covered with concrete, asphalt or any similar material, and free from long grass, loose soil or ashes.

Measurements shall be taken in clear weather. No other person than the observer taking the readings on the meter shall be in the vicinity of the sound signalling device or of the microphone, since the presence of bystanders may have an appreciable influence on the meter readings.

The ambient noise level within the entire range covered by frequencies of the sound components emitted by the sound signalling device shall be at least 10 dB lower than the sound level of each of the components. However, this requirement is not applicable to components with a measured sound pressure level lower than 70 dB (A).

No measurements shall be carried out when the wind speed is greater than 5 m/s.

The ambient temperature during the measurements shall be between + 10 °C and + 30 °C.

Measurements shall be carried out with the fast time constant.

5.2 Positioning of the microphone

See figure 1.

5.2.1 Direction

The axis of maximum sensitivity of the microphone shall be horizontal and parallel to the vertical longitudinal zero plane of the vehicle and directed towards the front of the vehicle.

5.2.2 Horizontal distance

The microphone shall be placed so that its diaphragm is in the vertical plane X_1 , 7 m from the foremost point of the vehicle and parallel to the zero X plane of the vehicle (vertical transverse zero plane).

5.2.3 Height above ground

The microphone shall be within a circle of 0,5 m radius whose centre is 1 m above the ground in the intersection of the X_1 plane and of the vertical longitudinal zero plane of the vehicle.

5.3 Supply conditions

5.3.1 Supply with alternating current

For sound signalling devices supplied by alternating current, the measurements shall be made with the engine running at three generator speeds corresponding to 50 %, 75 % and 100 % of the maximum vehicle speed specified by the manufacturer.

When the measurements are being made there shall be no other electrical load on the generator.

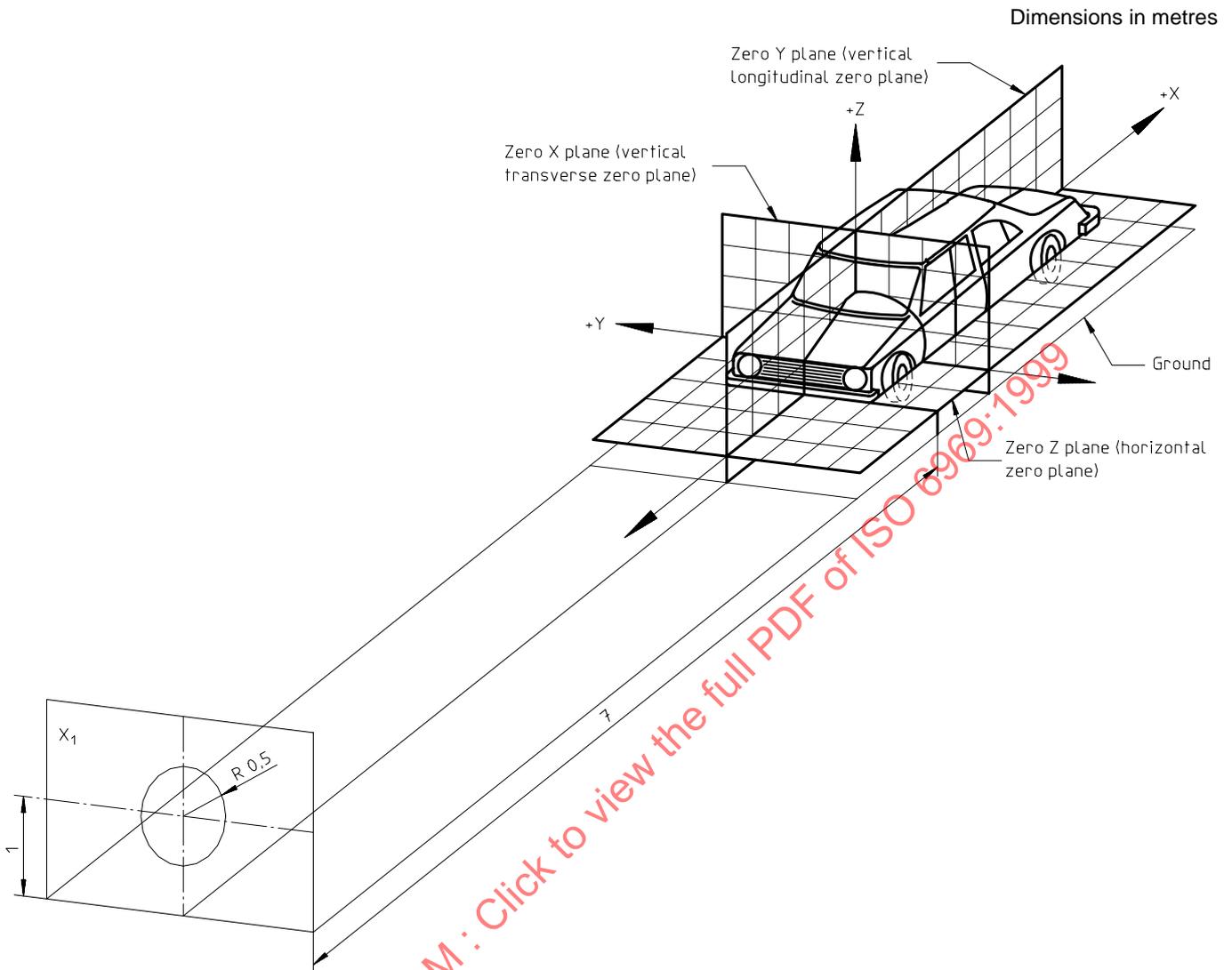


Figure 1 — Positioning of the microphone

5.3.2 Supply with direct current

The sound signalling devices shall be operated at test voltages of 6,5 V, 13 V or 26 V, whichever is required, measured at the terminals of the source of electrical energy with the sound device(s) in operation and corresponding respectively to rated voltages of 6 V, 12 V or 24 V.

If a rectified a.c. supply is used for the test, the alternating voltage components measured peak to peak at the terminals of the energy source during the operation of the sound signalling device shall not exceed 0,1 V. For electro-pneumatic sound signalling devices, the connections between the trumpets and the electro-compressor shall be made according to the indications of the manufacturer.

5.3.3 Supply with compressed air

Pneumatic sound signalling devices shall be supplied in accordance with the indications of the manufacturer.

5.4 Measurements

The measurements shall be made after finding the maximum sound pressure level within the measuring circle defined in 5.2.3.

The time of operation of the apparatus under test shall be as short as possible. In no case shall the test time exceed 30 consecutive seconds, after which it is necessary to allow the sound signalling device under test to cool down for at least 20 min.

In the case where a vehicle is equipped with several sound signalling devices which operate simultaneously, the measurements shall be made with all the devices operating at the same time.

Any peaks in the readings which are apparently unrelated to the characteristics of the general sound level shall not be taken into account.

6 Test results

Sound signalling devices shall emit a continuous uniform sound; their acoustic spectra shall not vary significantly during operation. For sound signalling devices operated by an a.c. supply, the requirements apply only at a constant generator speed, this speed being within the range specified in 5.3.1.

Measured under the conditions specified in clause 5, the value of maximum sound pressure level of the apparatus under test shall be not greater than 112 dB(A)¹⁾, but at least:

- a) 70 dB(A)²⁾ for sound signalling devices installed mainly on mopeds with a maximum speed of 30 km/h;
- b) 73 dB(A)²⁾ for sound signalling devices installed mainly on mopeds with a maximum speed greater than 30 km/h;
- c) 83 dB(A)³⁾ for sound signalling devices installed mainly on motorcycles of up to and including 7 kW power output of the engine;
- d) 93 dB(A)³⁾ for sound signalling devices installed mainly on vehicles having at least four wheels and for motorcycles with power output of the engine exceeding 7 kW.

NOTE — The values given here may differ from legal requirements in some countries (see for example 93/30/EEC).

1) Values are taken from ECE Regulation 28, part II, and 93/30/EEC.

2) Values are based on ECE Regulation 63, Annex 4, *Maximum sound level limits (new mopeds)*.

3) Values are taken from ECE Regulation 28, part II.