International Standard 6969

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

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

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

First edition — 1981-10-15

UDC 692.11.018.2 **Ref. No. ISO 6969-1981 (E)**

Descriptors : road vehicles, signal devices, sound signalling devices, tests, testing conditions, measurement.

Price based on 2 pages

Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 6969 was developed by Technical Committee ISO/TC 22, *Road vehicles*, and was circulated to the member bodies in December 1979.

It has been approved by the member bodies of the following countries :

Austria	India	Romania
Belgium	Italy	South Africa, Rep. of
Brazil	Korea, Dem. P. Rep. of	Spain
Bulgaria	Korea, Rep. of	Sweden
Egypt, Arab Rep. of	Mexico	United Kingdom
France	New Zealand	USSR
Germany, F.R.	Poland	

The member bodies of the following countries expressed disapproval of the document on technical grounds :

Netherlands
USA

Printed in Switzerland

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

1 Scope and field of application

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

The following specifications apply exclusively to the testing of acoustical properties of sound signalling devices mounted on new types of road vehicle.

2 References

ISO 512, *Road vehicles — Sound signalling devices — Technical specifications.* [1)]

ISO 3833, *Road vehicles — Types — Terms and definitions.*

IEC Publication 51, *Recommendations for direct acting indicating electrical measuring instruments and their accessories.*

IEC Publication 179, *Precision sound level meters.*

IEC Publication 225, *Octave, half-octave and third-octave band filters intended for the analysis of sounds and vibrations.*

3 Measuring apparatus

The measurement of sound pressure levels shall be made using a sound level meter conforming to IEC Publication 179.

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

The electrical measurements shall be made using instruments of the class 0.5 conforming to IEC Publication 51.

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/m^2), weighted in accordance with curve A, and the results expressed in decibels (A).

5 Test conditions

5.1 Test site of vehicle and ambient conditions

The vehicle being placed on an open site as, for example, an open space of 50 m radius, the central part of which, being intended for the execution of the measurements, shall be practically horizontal over at least 20 m radius, covered with concrete, asphalt or any similar material, and be 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 stay 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 components of the sound 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 and + 30 °C.

Measurements shall be carried out with the fast time constant.

1) At present at the stage of draft. (Revision of ISO 512-1974.)

5.2 Positioning of the microphone

5.2.1 Direction

The axis of maximum sensitivity of the microphone shall be horizontal and parallel to the longitudinal median 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 7 m from the foremost point of the vehicle.

5.2.3 Height above ground

The microphone shall be placed within a circle of 0,5 m radius, whose centre is 1 m above the ground in the longitudinal median plane of the vehicle.

5.3 Supply conditions

5.3.1 Supply with alternating current

For sound signalling devices supplied by alternating current (category I), 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.

5.3.2 Supply with direct current

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

5.4 Measurements

The measurements shall be made after having found 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.

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

6 Test results

6.1 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 ranges specified in 5.3.1.

6.2 *Measured under the conditions specified in the preceding* paragraphs, the value of maximum sound pressure level of the apparatus under test shall be at least :

a) 75 dB (A) for sound signalling devices installed mainly on mopeds;

b) 80 dB (A) for sound signalling devices installed mainly on motorcycles of up to and including 12 kW power output of the engine;

c) 93 dB (A) for sound signalling devices installed mainly on vehicles having at least four wheels and for motorcycles with power output of the engine exceeding 12 kW.

6.3 In the case where a vehicle is equipped with several sound signalling devices which operate simultaneously, the prescribed minimum value shall be obtained by operating all the devices at the same time.