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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 512

SOUND SIGNALLING DEVICES ON MOTOR VEHICLES

ACOUSTIC STANDARDS AND TECHNICAL SPECIFICATIONS

1st EDITION

October 1966

For each individual country the only valid standard is the national standard of that country.

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BRIEF HISTORY

The ISO Recommendation R 512, *Sound Signalling Devices on Motor Vehicles – Acoustic Standards and Technical Specifications*, was drawn up by Technical Committee ISO/TC 22, *Automobiles*, the Secretariat of which is held by the Association Française de Normalisation (AFNOR).

Work on this question by the Technical Committee began in 1961 and led, in 1962, to the adoption of a Draft ISO Recommendation.

In December 1962, this Draft ISO Recommendation (No. 549) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies:

Australia	France	Poland
Austria	Greece	Portugal
Brazil	Hungary	Romania
Burma	India	Spain
Chile	Italy	Turkey
Czechoslovakia	Japan	U.S.S.R.
Finland	New Zealand	

Seven Member Bodies opposed the approval of the Draft:

Belgium	Switzerland
Denmark	United Kingdom
Germany	U.S.A.
Sweden	

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in October 1966, to accept it as an ISO RECOMMENDATION.

ISO Recommendation R 512 October 1966

SOUND SIGNALLING DEVICES ON MOTOR VEHICLES

ACOUSTIC STANDARDS AND TECHNICAL SPECIFICATIONS

1. PURPOSE

This ISO Recommendation deals with sound signalling devices

— mounted on motor vehicles
— functioning with an electrical current
— designed for use outside built-up areas.

The aim of this ISO Recommendation is to specify their acoustic properties, such as spectral distribution of acoustic power and sound pressure level, and also their test conditions.

2. SCOPE

The sound signalling devices have been divided into three categories, corresponding to their operating conditions and to the vehicles on which they are used.

Type I Sound signalling devices for motor cycles without storage battery,

Type II Sound signalling devices for motor cycles with storage battery,

Type III Sound signalling devices for motor vehicles other than motor cycles.

3. TESTS

3.1 Test for apparatus not mounted on vehicle

3.1.1 *Conditions of supply to the sound signalling device during the test*

For sound signalling devices supplied with power at voltages of

6.5 ± 0.1 V, 13.0 ± 0.1 V or 26.0 ± 0.1 V

at the terminals of the battery corresponding respectively to rated voltages of

6 V, 12 V, or 24 V

the resistance in the system should be the following:

— 0.05 Ω for a rated voltage of 6 V
— 0.10 Ω for a rated voltage of 12 V
— 0.20 Ω for a rated voltage of 24 V.

The resistances at terminals and contacts are included.

For sound signalling devices supplied with alternating current, it is essential for the electric current to be supplied

— either by the generator of the vehicle for which the sound signalling device is intended, with the generator being driven as though the engine of the vehicle were running at a rate between 70 and 100 per cent of the speed of revolution corresponding to the maximum power of the engine;

— or, in exceptional cases where the above means of supply cannot be easily used, by a transformer connected to a supply system at 50 Hz, provided that the same effective voltage is obtained.

Any other electric charge on the generator of the vehicle is excluded during the test.

3.1.2 *Mounting of apparatus*

The apparatus to be tested should be mounted in the manner specified by the manufacturer and in any case should be fixed rigidly on a base whose mass is ten times that of the apparatus to be tested, and at least equal to 15 kg.

3.1.3 *Sound pressure level*

A sound level meter which conforms to Publication No. 179, *Precision Sound Level Meters*, of the International Electrotechnical Commission (IEC) should be used.

Measurements should be made without using any weighting curve, so that readings are made in physical decibels.

If the sound level meter is not so designed that a procedure without weighting curve can be applied, then decibels C should be used.

The values of sound pressure level should be expressed in decibels in relation to 2×10^{-5} N/m^2 (r.m.s.).*

The apparatus to be tested and the microphone are placed at the same height (between 0.75 m and 1.25 m from the ground) and the microphone should be on the axis of the apparatus.

Measured at a distance of 2 m from the apparatus, in an open space or in a sound-proof room, the sound pressure level of the apparatus should lie within the following limiting values:

— 85 to 105 dB for sound signalling devices of Type I,
— 95 to 125 dB for sound signalling devices of Type II,
— 105 to 125 dB for sound signalling devices of Type III.

The distance of 2 m should be measured between the planes of the diaphragms of the microphone and of the sound signalling device.

Specifications of an open space are given in ISO Recommendation R 362, *Measurement of Noise emitted by Vehicles*, section 4.

In addition, the acoustic spectrum of sound emitted by the apparatus should present, within the band of frequency of 1800 to 3550 Hz, a sound pressure level greater than that of any component of frequency exceeding 3550 Hz, and in any case it should be equal to or greater than

— 85 dB for sound signalling devices of Type I,
— 95 dB for sound signalling devices of Type II,
— 105 dB for sound signalling devices of Type III.

* r.m.s. = root mean square.