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**Performance requirements and test
methods of horn for motor vehicles**

机动车用喇叭的性能要求及试验方法

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Performance requirements and test methods of horn for motor vehicles

1 Scope

This Standard specifies the performance requirements, test methods of electric horn and air horn for motor vehicles and loading performance requirements and test methods of the horn.

This Standard applies to type M, N, L motor vehicles.

Note: Type L motor vehicles include type L₁ and L₂ mopeds.

2 Normative references

The following documents are indispensable for the application of this document. For the dated references, only the editions with the dates indicated are applicable to this document. For the undated references, the latest edition (including all the amendments) are applicable to this document.

GB/T 3241 Electroacoustics - Octave-band and fractional-octave-band filters

GB/T 3785.1 Electroacoustics - Sound level meters - Part 1: Specifications

3 Performance requirements and test methods

3.1 Performance requirements

3.1.1 General requirements

The horn shall emit a continuous and uniform sound. For pneumatic and electro-pneumatic horns, the time FROM the moment the horn has just been pushed TO the sound pressure level specified in 3.1.2 shall not exceed 0.2 s.

3.1.2 Sound pressure level

3.1.2.1 Under the conditions specified in 3.2.3.1, the A-weighted sound pressure level at 2 m from the horn shall satisfy:

- a) The horn for mopeds shall not be less than 90 dB(A) and not more than 115 dB(A);

The test shall be carried out in good weather. Unless otherwise specified, during the test, the ambient temperature shall be $23\text{ }^{\circ}\text{C}\pm 5\text{ }^{\circ}\text{C}$.

3.2.1.2 During the test, except the meter observer, other personnel shall not stay near the horn and the microphone. When observing the meter, the pointer swing which is independent of the sound pressure level being measured shall be ignored.

3.2.2 Test instruments

3.2.2.1 The sound pressure level shall be measured using a sound level meter which meets the first-class accuracy specified in GB/T 3785.1. During the measurement, the fast time constant “F” shall be used. The total sound pressure level is measured using the “A” metering gear. The reference sound pressure is $20\text{ }\mu\text{Pa}$.

3.2.2.2 The spectrum of the sound is obtained using Fourier transform of the sound signal. It is allowed to, according to GB/T 3241, adopt 1/3 octave-band filters. For the sound pressure level at the center frequency of 2500 Hz, it shall be obtained by the mean square value of the sound pressure of 1/3 of the center frequencies of 2000 Hz, 2500 Hz, and 3150 Hz; usually USE only the Fourier transform.

3.2.2.3 The accuracy of electrical measuring meter is class 0.5.

3.2.3 Test conditions

3.2.3.1 The test conditions for the electric horn are:

- a) For the nominal voltage of 6 V, 12 V, 24 V, the test voltage is measured from the output of the power supply. TAKE $6.5\text{ V}\pm 0.1\text{ V}$, $13\text{ V}\pm 0.1\text{ V}$, $26\text{ V}\pm 0.2\text{ V}$, respectively;
- b) If the rectifier power supply is used for testing, when the horn is working, the voltage AC component measured from the supply terminal shall be no more than 0.1 V (peak/peak value);
- c) The wiring resistance including the joint and the contact resistance is:

Nominal voltage 6 V: Resistance value $\leq 0.05\text{ }\Omega$;

Nominal voltage 12 V: Resistance value $\leq 0.10\text{ }\Omega$;

Nominal voltage 24 V: Resistance value $\leq 0.20\text{ }\Omega$.

3.2.3.2 Pneumatic and electro-pneumatic horns shall be operated at the air pressure or voltage specified by the manufacturer.

4 Loading performance requirements and test methods

4.1 Performance requirements

4.1.1 The horn installed on motor vehicles shall comply with the performance requirements and test methods of the horn of Clause 3.

4.1.2 The horn shall be mounted in the front of motor vehicles. Its sound pressure level shall satisfy:

- a) For mopeds, it shall be no less than 75 dB(A) and no more than 112 dB(A);
- b) For motorcycles with a power not greater than 7 kW, it shall be no less than 83 dB(A) and no more than 112 dB(A);
- c) For type M and N automobiles and motorcycles with a power greater than 7 kW, it shall be no less than 87 dB(A) and no more than 112 dB(A).

4.2 Test methods

4.2.1 Test environment and test instruments

The test environment and test instruments shall comply with the relevant provisions of 3.2.

4.2.2 Installation of the instruments

The microphone of the measuring instrument shall be placed close to the longitudinal plane of the center of the vehicle. The effects of the following factors on the measurement results shall be considered:

- a) A fixed part which mounts the horn on the vehicle;
- b) Position of the horn on the motor vehicle;
- c) The rigidity of the horn mounting bracket;
- d) The shape and material of the front structure of the vehicle which may affect the horn's sound pressure level and have a shielding effect.

4.2.3 Measuring conditions of sound pressure level

The measurement of sound pressure level shall meet the following conditions:

- a) The sound pressure level shall be measured 7 m ahead of the vehicle;
- b) Within the range of 0.5 m~1.5 m from the ground, the maximum sound

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