

ICS 27.020
CCS J 93



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 33928-2017

**Reciprocating internal combustion engines -- Measurement method for
silencers -- Sound power level of exhaust noise and insertion loss
using exhaust sound pressure and power loss ratio**

Issued on: July 12, 2017

Implemented on: February 1, 2018

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China, Standardization
Administration of the People's Republic of China**

Table of Contents

Foreword

1 Scope

1.1 Measurement uncertainty

Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard uses the translation method identical with ISO 15619.2013 "reciprocating internal combustion engine exhaust muffler method of sound pressure exhaust

Noise power level and insertion loss and power loss ratio "(in English).

The documents of our country that are consistent with the corresponding international documents that are normative references in this standard are as follows.

--- GB/T 3241-2010 Electroacoustics Octave and Fractional Octave Filters (IEC 61260.1995, MOD)

This standard is proposed by the China Machinery Industry Federation.

This standard by the National Internal Combustion Engine Standardization Technical Committee (SAC/TC177) centralized.

This standard was drafted by Shanghai Internal Combustion Engine Research Institute, Shanghai Automotive Group Co., Ltd. Commercial Vehicle Technology Center, Jiangsu Emei power

Machinery Co., Ltd., Guangxi Yuchai Machinery Co., Ltd., View-car Co., Ltd., Hangzhou Silver Wheel Technology Co., Ltd., Tongji University, Zhejiang

Jiang University, Tianjin Internal Combustion Engine Research Institute, Shanghai Automotive Group Co., Ltd. car technology center.

1 Scope

This standard specifies the reciprocating internal combustion engine exhaust muffler with the measurement methods and requirements, including laboratory measurement methods and field measurements

method.

Laboratory (Engineering) measured the amount of.

--- Sound pressure method of exhaust noise sound power level (A weight or band), the accuracy level of 2;

--- Exhaust muffler insertion loss (A weight or band);

Reciprocating internal combustion engine power loss ratio.

The field and laboratory (simple method) determination of the amount of.

--- Sound pressure measurement of exhaust noise sound power level (A weighted), accuracy rating of 3;

--- Exhaust muffler insertion loss (A weighted).

Note 1. The laboratory-determined exhaust noise sound power level is intended to obtain measurements of Level 2 accuracy classes (Engineering Methods) such as background noise correction and/or the environment

Conditions and/or exhaust port position can not meet the requirements of this standard engineering law, you get 3 levels of accuracy (simple method) of the measurement results; the standard site

The measured exhaust noise sound power level is obtained only by the level 3 accuracy level (simple method) measurement results.

This standard laboratory (engineering method) measurement methods can be used for acceptance testing, but also for the development of engineering measures; site and laboratory (simplified method)

Measurement methods can be used for comparative tests.

This standard applies to equipped with GB/T 6072.1-2008 applicable range reciprocating internal combustion engine exhaust muffler, and there is no suitable standard

Other exhaust mufflers may be used.

Note 2. The following text unless otherwise specified, the exhaust muffler referred to as muffler, Reciprocating internal combustion engine referred to as the engine.

1.1.1 Engineering Law

For A-weighted sound power level measurements, the reproducibility standard deviation is less than or equal to 1.5 dB. For 1/3 octave band sound power level measurements, at

Within 50Hz ~ 80Hz, the standard deviation of reproducibility is less than or equal to 5dB; within 100Hz ~ 160Hz, the reproducibility standard deviation is less than or equal

At 3dB; within 200Hz ~ 315Hz, the standard deviation of reproducibility is less than or equal to 2dB; within 400Hz ~ 5000Hz, the reproducibility of the standard

The quasi-deviation is less than or equal to 1.5dB. The reproducibility standard deviation is less than or equal to 2.5dB at 6300Hz ~ 10000Hz. On the octave band

Sound power level measurement, reproducibility standard deviation less than or equal to 5 dB at 63 Hz; reproducibility standard deviation less than or equal to 125 Hz

At 3 dB; at 250 Hz, the standard deviation of reproducibility is less than or equal to 2 dB; within 500 Hz to 4000 Hz, the standard deviation of reproducibility is small

At or equal to 1.5dB; at 8000Hz, the reproducibility standard deviation is less than or equal to 2.5dB.

1.1.2 simple method

For A-weighted sound power level measurements, the reproducibility standard deviation is less than or equal to 4 dB.

NOTE The standard deviation in 1.1.1 is the combined effect of the measurement conditions and measurement methods as defined in this standard. It does not include the effect of the sound source itself, ie the mounting bar

The impact of changes in parts and/or working conditions. They are caused by the following aspects. Changes between measurement sites, including outdoor and climatic conditions, room

Interior room geometry and boundaries Sound absorption, acoustic properties of the reflective surface; background noise; calibration form of the instrument; changes in experimental techniques, including gauges

Surface shape and size, measurement distance, microphone position and number, sound source position, determination of environmental correction (if any) and integration time.
Standard