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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 1859.4-2017

Replacing GB/T 1859.4-2017

Reciprocating internal combustion engines - Measurement of sound power level using sound pressure - Part 4: Survey method for use in situ

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Table of Contents

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1.Structure and drafting rules for standardization documents"

Drafting.

This document is Part 4 of GB/T 1859 "Reciprocating internal combustion engines - Determination of sound power levels by the sound pressure method".

The following parts are published.

--- Part 1.Engineering law;

--- Part 2.Simple method;

--- Part 3.Semi-anechoic chamber precision method;

--- Part 4.Simple method for field measurement.

This document replaces GB/T 1859.4-2017 "Reciprocating internal combustion engines - Determination of sound power levels by sound pressure method - Part 4.Using standard sound pressure level

Compared with GB/T 1859.4-2017, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

--- Changed "Terms and Definitions" and added symbols (see Chapter 3, Chapter 3 of the.2017 edition);

--- Deleted "Criteria for acoustic suitability of the test environment" (see 4.3 of the.2017 edition);

--- Changed "Working Conditions" (see Chapter 6, Chapter 6 of the.2017 edition);

--- Changed "Measurement distance" (see 7.4, 7.4 of the.2017 edition);

--- Changed the "Microphone location suitability criteria" (see 7.7, 7.7 of the.2017 edition).

This document is equivalent to ISO 6798-3.2022 "Reciprocating internal combustion engines - Determination of sound power levels by sound pressure method - Part 3.Field measurements"

"Simplified Method".

The following minimal editorial changes have been made to this document.

--- In order to coordinate with the existing standard, the name of the standard is changed to "Determination of sound power level of reciprocating internal combustion engines by sound pressure method Part 4.

A Simple Method for Field Measurement.

Introduction

The sound power level measurement results are basically independent of the test environment and the installation conditions of the sound source. This is the use of sound power level to characterize various types of machines and

An important cause of equipment noise radiation.

Sound power level is used for the following purposes.

--- Indication of the machine radiated noise under specified conditions;

---Verification of noise label value;

--- Comparison of radiated noise of machines of various models and sizes;

--- Comparison with the noise limits specified in the purchase contract or specification;

--- Development of engineering measures to reduce machine radiated noise (generally, the frequency band sound power level is also required);

--- Prediction of noise sound pressure level at specified locations.

GB/T 1859 "Determination of sound power level of reciprocating internal combustion engines by sound pressure method" is a guide to measure the sound power level of reciprocating internal combustion engines by measuring the sound power level on the measurement surface of the envelope sound source.

The standard for calculating sound power level based on pressure level is designed to obtain sound power level measurement results with a specified accuracy level and consists of four parts.

--- Part 1.Engineering method. The purpose is to obtain the sound power level measurement results of Class 2 accuracy level, which can be used for acceptance test and also

Can be used to formulate engineering measures.

--- Part 2.Simple method. The purpose is to obtain sound power level measurement results with a level 3 accuracy level, which can be used for comparative tests.

--- Part 3.Semi-anechoic chamber precision method. The purpose is to obtain the sound power level measurement results of Class 1 accuracy level, which can be used for calibration

The test can also be used to formulate engineering measures.

--- Part 4.Simple method for field measurement. The purpose is to obtain the sound power level measurement results of level 3 accuracy, which can be used for comparison

test.

Table 1 gives three accuracy levels of sound power level determination methods, the measurement results are accurate to 0.1dB.

The A-weighted sound power level can be measured with an accuracy of Class 3.

Table 2 gives the measurement uncertainty limits of sound power level (upper limit of reproducibility standard deviation). They reflect the overall measurement uncertainty.

The total effect is not included, but the sound power level changes caused by factors such as the installation conditions and operating conditions of the measured sound source are excluded.

In the noise control of reciprocating internal combustion engines, relevant parties (including manufacturers, installers and users, etc.) should conduct effective

Only when clear acoustic quantities are obtained under the specified measurement conditions and the specifications of this document are used, can the acoustic information be effectively communicated.

Therefore, when selecting these standards, the noise measurement purpose and measurement conditions should be taken into consideration.

Make the best choice.

Table 1 Sound power level measured by sound pressure method specified in GB/T 1859 series standards

parameter

GB/T 1859.1

Engineering Law

Level 2

GB/T 1859.2

Simple method

Level 3

GB/T 1859.3

Semi-anechoic chamber precision method

Level 1