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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 15371-2023

Replacing GB/T 15371-2008

Reciprocating internal combustion engines - Evaluation method of torsional vibration of crankshaft system

往复式内燃机 曲轴轴系扭转振动评定方法

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1.Structure and Drafting Rules of Standardization Documents" Drafting. This document replaces GB/T 15371-2008 "Measurement and Assessment Method of Torsional Vibration of Crankshaft Shaft Systems" and is consistent with GB/T 15371-2008. In addition to structural adjustments and editorial changes, the main technical changes are as follows:

a) Changed the "scope" (see Chapter 1, Chapter 1 of the.2008 edition);

b) Changed "Terms and Definitions" (see Chapter 3, Chapter 3 of the.2008 edition);

c) The provisions of "torsional vibration calculation" have been changed (see Chapter 4,

Chapter 4 of the.2008 edition);

d) The provisions of "torsional vibration measurement" have been changed (see Chapter 5, Chapter 5 of the.2008 edition);

e) The provisions of "torsional vibration assessment" have been changed (see Chapter 6, Chapter 6 and Chapter 7 of the.2008 edition). Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents. This document is proposed by China Machinery Industry Federation. This document is under the jurisdiction of the National Internal Combustion Engine Standardization Technical Committee (SAC/TC177). This document was drafted by: Shanghai Internal Combustion Engine Research Institute Co., Ltd., Shanghai Automotive Group Co., Ltd. Commercial Vehicle Technology Center, Shanghai Motor Vehicle Inspection and Certification Technology Research Center Co., Ltd., Yiyi Internet Technology Co., Ltd., Tongji University, Tianjin Internal Combustion Engine Research Institute (Tianjin Tianjin Motorcycle Technology Center), Weichai Power Co., Ltd., Shanghai New Power Automobile Technology Co., Ltd., SAIC Motor Corporation Limited Co., Ltd., Pan Asia Automotive Technology Center Co., Ltd., Hunan Liyu Gas Power Co., Ltd., Weifang Internal Combustion Engine Quality Inspection Center Co., Ltd. company. The main drafters of this document. Wang Yuanwen, Zhang Hongbo, Han Jing, Yuan Weiping, Hu Aihua, Jiang Changlong, Wang Zhiyi, Ma Qingzhen, Zhang Longbing, Wang Jiabao, Jing Yabing, Liu Tao, Wang Xiaohu, Zhou Yi, Yang Kai, Zhang Dan, Ye Huaihan, Wang Hongjian. This document was first published in.1994, revised for the first time in.2008, and this is the second revision. Torsional vibration of crankshaft system of reciprocating internal combustion engine Assessment method

1 Scope

GB/T 15371-2023 is the Chinese national standard on reciprocating internal combustion engines - evaluation method of torsional vibration of crankshaft system, in the field of energy and heat transfer engineering. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 7 September 2023 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 April 2024. Classification: ICS 27.020, CCS J90. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document describes the calculation, measurement and analysis of torsional vibrations of shafting systems driven by reciprocating internal combustion engines (hereinafter referred to as "torsional vibrations" unless otherwise stated). Assessment methods. This

document applies to reciprocating internal combustion engines defined in GB/T 6072.1 (hereinafter referred to as "engines" unless otherwise stated) driven Shaft system.

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, the dated quotations For undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to this document.

GB/T 6072.1 Reciprocating internal combustion engine performance Part

1.Calibration and test methods for power, fuel consumption and oil consumption Additional requirements for general purpose engines

GB/T 6072.3 Reciprocating internal combustion engine performance Part

3 Terms and definitions

The terms and definitions defined in GB/T 6072.1, GB/T 13436 and the following apply to this document.

3.1 crankshaft system crankshaft system The assembly of the crankshaft and its associated rotatable parts.

3.2 torsional vibration torsionalvibration Oscillating angular deformation (torsion) of the rotating shaft system.

3.3 The maximum angular displacement measured in a section perpendicular to the axis of the shaft system between the angular position to be evaluated and any given reference position.

3.4 natural frequency naturalfrequency The inherent characteristic parameters of the structure can be obtained from the motion equations of each undamped system.

Note. It is usually not necessary to calculate the natural frequency of the damping system.

3.5 natural vector naturalvector When the system vibrates at the corresponding natural frequency, the relative amplitude of each profile to any selected reference profile.