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

GB/T 45049-2024

**Earth-moving machinery - Battery electric hydraulic excavators
- Test methods**

土方机械 纯电动液压挖掘机 试验方法

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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. Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document was proposed by the China Machinery Industry Federation. This document is under the jurisdiction of the National Technical Committee for Standardization of Earthmoving Machinery (SAC/TC334). This document was drafted by: Guangxi Liugong Machinery Co., Ltd., China Machinery Huanyu (Shandong) Vehicle Certification and Inspection Co., Ltd., Shandong Construction Machinery Co., Ltd., SINOMACH Heavy Industry Group Changlin Co., Ltd., China Railway Changan Heavy Industry Co., Ltd., Liuzhou Automobile Inspection Co., Ltd., Xuzhou XCMG Excavator Machinery Co., Ltd., Xiamen Yulong Machinery Co., Ltd., Sany Heavy Machinery Co., Ltd., Tianjin Engineering Machinery Research Institute Co., Ltd., Jiangsu Xugong Heavy Industry Laboratory Technology Co., Ltd., Sichuan-Tibet Railway Technology Innovation Center Co., Ltd., Weichai (Qingdao) Smart Heavy Industry Co., Ltd., China Railway No.

5 Engineering Group Co., Ltd. Tuan First Engineering Co., Ltd. and Hangzhou Nanhua Auto Parts Co., Ltd. The main drafters of this document are: Guo Weifu, Tian Xiaochong, Li Ruiguang, Zhang Zhen, Cui Runbing, Xia Sheng, Song Ji, Zeng Feng, Cui Huixi, Li Guangqing, Yang Chao, Mei Yongbing, Wang Meng, Luo Yunjie, Wu Jianhua, Lu Haidong, Tan Guilin, Wu Hongli. Earth-moving machinery - Test methods for pure electric hydraulic excavators

1 Scope

GB/T 45049-2024 is the Chinese standard for testing battery electric hydraulic excavators, the companion to the requirements standard GB/T 45046. Electrifying an excavator changes what has to be measured: a diesel machine is compared on fuel consumption and on engine power, an electric one on energy consumption per working cycle, on endurance, on charging time and on how the available power falls as the battery discharges, and none of those had an agreed test method. This document supplies them: the test conditions and the instrumentation, the measurement of the electrical parameters, the digging force and

the hydraulic performance tests, the working cycle tests from which the energy consumption and the endurance are derived, the charging tests, the temperature rise tests, the noise measurement, the tests of the safety and protection functions and of the battery system, and the test report. For a machine builder, a fleet buyer or a testing house working in China, this is the protocol a comparison rests on.

This document describes the test methods for purely electric hydraulic excavators. This document is applicable to the inspection of pure electric hydraulic excavators.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB 3838-2002 Surface water environmental quality standard

GB/T 4208 Enclosure protection grade (IP code)

GB/T 6572 Terminology and commercial specifications for earth-moving machinery hydraulic excavators

GB/T 7586-2018 Earth-moving machinery hydraulic excavator test methods

GB/T 8419 Laboratory evaluation of vibration of earth-moving machinery driver's seats

GB/T 8499 Method for determining the center of gravity of earth-moving machinery

GB/T 8595 Earth-moving machinery operator's controls

GB/T 10913 Determination of travel speed of earth-moving machinery

GB/T 13331 Earth-moving machinery - Hydraulic excavator lifting capacity

GB/T 13332 Earth-moving machinery - Method for determination of digging force for hydraulic excavators and backhoe loaders

GB/T 14848-2017 Groundwater Quality Standard

GB/T 16937 Earth-moving machinery driver's field of vision test method and performance criteria

GB/T 18488 Drive motor systems for electric vehicles

3 Pressurization test method

GB/T 19933.4 Earth-moving machinery cab environment Part

4 Test methods and performance

GB/T 19933.5 Earth-moving machinery cab environment Part

5 Test methods for windshield defrosting systems

GB/T 20418 Lighting, signal and marking lights and reflectors for earth-moving machinery

GB/T 21152 Earth-moving machinery - Wheeled or high-speed rubber tracked machine brake system performance requirements and test methods

GB/T 21155 Test methods and performance criteria for sound warning devices and front horns of earth-moving machinery

GB/T 22359.1 Electromagnetic compatibility (EMC) of earth-moving machinery and construction machinery with built-in power supply Part

1. Typical General requirements for EMC under electromagnetic environment conditions