



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

GB/T 38943.1-2020

**Earth-moving machinery--Electrical safety of machines utilizing
electric drives and related components and systems - Part 1:
General requirements**

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Foreword

GB/T 38943 Earth-Moving Machinery - Electrical Safety of Machines Utilizing Electric Drives

and Related Components and Systems consists of the following 3 parts.

- Part 1.General Requirements;
- Part 2.Particular Requirements for Externally-Powered Machine;
- Part 3.Particular Requirements for Self-Powered Machines.

This Part is Part 1 of GB/T 38943.

This Standard was drafted as per the rules specified in GB/T 1.1-2009.

This Part used translation method to equivalently adopt ISO 14990-1.2016 Earth-Moving Machinery - Electrical Safety of Machines Utilizing Electric Drives and Related Components and Systems - Part 1.General Requirements.

The Chinese documents that have consistent correspondence with the international documents

referenced in this Part are as follows.

- GB/T 311.2-2013 Insulation co-ordination - Part 2.Application guide (IEC 60071-2.1996, MOD);
- GB/T 4208-2017 Degrees of protection provided by enclosure (IP code) (IEC 60529.2013, IDT)
- GB/T 4728.1-2018 Graphical symbols for electrical diagrams - Part 1.General

information (IEC 60617 DB, MOD);

---- GB/T 5465.1-2009 Electrical equipment with the basic rules of graphic symbols - Part

1 Creation of symbol originals (IEC 60417 DB.2007-01, MOD);

--- GB/T 7251.1-2013 Low-voltage switchgear and controlgear assemblies - Part 1.General rules (IEC 61439-1.2011, IDT);

--- GB/T 11024.1-2019 Shunt capacitors for A.C. power systems having a rated voltage above 1 000 V - Part 1.General (IEC 60871-1.2014, MOD);

--- GB/T 14048.1-2012 Low-voltage switchgear and controlgear - Part 1.General rules (IEC 60947-1.2011, MOD);

--- GB/T 16935.1-2008 Insulation coordination for equipment within low-voltage systems - Part 1.Principles requirements and tests (IEC 60664-1.2007, IDT);

--- GB/T 17299-1998 Earth-moving machinery - Minimum access dimensions (idt ISO 2860.1992);

--- GB/T 19212.1-2016 Safety of power transformers, power supplies, reactors and similar products - Part 1.General requirements and tests (IEC 61558-1.2009, MOD);

--- GB/T 25686-2018 Earth-moving machinery - Safety requirements for remote operator control systems (ISO 15817.2012, IDT);

--- GB/T 34989-2017 Connectors - Safety requirements and tests (IEC 61984.2008, MOD).

This Part was proposed by China Machinery Industry Federation.

This Part shall be under the jurisdiction of National Technical Committee on Earth-Moving Machinery of Standardization Administration of China (SAC/TC 334).

Drafting organizations of this Part. XCMG Construction Machinery; Longgong (Shanghai) Machine Manufacturing Co., Ltd.; Guangxi Liugong Machinery Co., Ltd.; Tianjin Research Institute of Construction Machinery Co., Ltd.; Inner Mongolia North Hauler Joint Stock Co., Ltd.; and Shaanxi Tonly Heavy Industries Co., Ltd.

Chief drafting staffs of this Part. Song Tianjia, Zhang Hanbin, Cai Wen, Deng Yanfang, Li Laiping, Zhao Rong, and Xue Yanjie.

1 Scope

This Part of GB/T 38943 specifies general safety requirements for the electrical equipment and

its components incorporated into earth-moving machines (EMMs) as defined in ISO 6165, and

addresses the safety of operators, technicians, service/maintenance personnel and bystanders.

2 Normative References

The following documents are essential to the application of this Document. For the dated documents, only the versions with the dates indicated are applicable to this Document; for the

undated documents, only the latest version (including all the amendments) is applicable to this

Document.

3 Terms, Definitions and Abbreviated Terms

For the purposes of this document, the terms, definitions and abbreviated terms given in ISO

4 General Requirements

If factory-built, type-tested HV switchgear is employed it shall comply with applicable standards (e.g., IEC 62271-1, IEC 62271-200, and IEC 62271-201).

The electrical equipment of the EMM shall be protected against or be tolerant of the ingress of

harmful solids and liquids, including dust, acids, corrosive gases, and salts, that might be present in the operating environment.

5 Protection against Electric Shock Hazards

Live parts shall be contained within enclosures that comply with the relevant requirements of

Clause 4, Clause 12 and Clause 14, and which provide protection against direct contact of at