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

GB/T 38943.2-2020

**Earth-moving machinery--Electrical safety of machines utilizing
electric drives and related components and systems - Part 2:
Particular requirements for externally-powered machines**

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Table of Contents

1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 General requirements	2
5 Protection against electric shock	2
6 Electrical fire protection	4
7 Protection against thermal hazards	4
8 Mechanical hazard protection	4
9 Protection against abnormal operation hazards	5
10 Power source	5
11 Route	6
12 Electric motor	8
13 Non-motor load	8
14 Control system	8
15 Manuals and technical documents	8
16 Mark	9
17 Experiment	10
Appendix A (informative appendix) Inquiry form for electrical equipment of external power machinery	11
Reference	14

Foreword

GB/T 38943 "Electrical Safety of Machinery Driven by Electricity for Earth-moving Machinery and Related Parts and Systems" is divided into three parts.

---Part 1.General requirements;

---Part 2.Specific requirements for external power machines;

---Part 3.Specific requirements for self-propelled machines.

This part is Part 2 of GB/T 38943.

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

The translation method used in this part is equivalent to the adoption of ISO 14990-2:2016

“Earth-moving machinery using electric drive machinery and related parts and Electrical safety of the system Part 2. Specific requirements for externally powered machines.

The Chinese documents that have a consistent correspondence with the international documents cited in this section are as follows.

---GB/T 4026-2019 Basic and safety rules for the identification of human-machine interface, equipment terminal, conductor terminal and conductor mark

Knowledge (IEC 60445.2017, IDT);

---GB/T 16895.6-2014 Low-voltage electrical installations Part 5-52. Selection of electrical equipment and installation wiring system

(IEC 60364-5-52.2009, IDT);

---GB/T 16935.1-2008 Insulation coordination of equipment in low-voltage systems Part 1. Principles, requirements and tests

(IEC 60664-1.2007, IDT);

---GB/T 38943.3-2020 Electrical safety of earth-moving machinery and related parts and systems driven by electricity No. 3

Part. Specific requirements for self-propelled machines (ISO 14990-3.2016, IDT).

This section has made the following editorial changes.

--- Supplementary explanation for the symbols of the electric motor (motor) not explained in Figure 2.

Please note that certain contents of this document may involve patents. The issuing agency of this document is not responsible for identifying these patents.

This part was proposed by China Machinery Industry Federation.

This part is under the jurisdiction of the National Earthmoving Machinery Standardization Technical Committee (SAC/TC334).

Drafting organizations of this section. Xuzhou Construction Machinery Group Co., Ltd., Anhui Zhiyi Technology Development Co., Ltd., Tianjin Construction Machinery Research Institute

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Introduction

Electrification technology can make machine packaging more flexible. Early earth-moving machinery (EMM) electrical systems were mainly in the 12V~24V direct

Within the flow range, so you need to pay special attention to the following two safety aspects.

---Very high voltages, such as those used in industry, construction and other transportation sectors;

---Greater available electrical energy.

Part of this section applies to electrical design (such as Chapter 9, Chapter 11, Chapter 12, and Chapter 17). Due to certain design attributes

It is inseparable from electrical safety, so these requirements are necessary.

Part of the content of this section is based on IEC 60204-1 and IEC 60204-11, and adjusted according to the actual needs of earth-moving machinery.

Non-electrical hazards are described in the ISO 20474 series of standards.

Figure 1 helps to understand the relationship between the various components of a machine and its related equipment. Figure 1 is a typical machine and related equipment

The prepared block diagram shows the various components of the electrical equipment mentioned in this section.

Figure 1 Typical machine frame diagram

Earth-moving machinery uses electric-driven machinery and

Electrical safety of related parts and systems

Part 2. Specific requirements for externally powered machines

1 Scope

This part of GB/T 38943 specifies the characteristics of the electrical system and its components of the electric drive earthmoving machinery (EMM) using external power.

Set safety requirements.

This part is applicable to AC with any frequency within the range of 50V~36kV and DC within the range of 75V~36kV.

Electricity, including any machine for outdoor use with repetitive rate pulsating direct current.

The voltage inside the device is not on-board voltage, so it is not within the scope of this section.

This part is used in conjunction with GB/T 38943.1. GB/T 38943.1 specifies the general requirements for electric-driven earth-moving machinery.

GB/T 38943.3 specifies the specific requirements for self-propelled earth-moving machinery. For earth-moving machinery that has both self-powered and external power (e.g.

Such as a battery-powered machine with a built-in charger and power supply function), it should also meet the requirements of GB/T 38943.3.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this article

Pieces. For undated references, the latest version (including all amendments) applies to this document.

GB/T 38943.1-2020 Electrical safety of earth-moving machinery and related parts and systems driven by electricity, Part 1

Points. General requirements (ISO 14990-1.2016, IDT)

ISO 14990-3 Earth-moving machinery, electrical safety of electrical-driven machinery and related parts and systems-Part 3.Self-propelled

Machine specific requirements

(Earth-movingmachinery-Electricalsafetyofmachinesutilizingelectricdrivesorre-

latedcomponentsandsystems-Part 3.Particularrequirementsforself-poweredmachines)

IEC 60071-1.2006 Insulation Coordination Part 1.Definitions, Principles and Rules
(InsulationCoordination-Part 1.

Definitions,principlesandrules)

IEC 60071-1Amd.1.2010 Insulation Coordination Part 1.Definitions, Principles and Rules
(InsulationCoordination-

Part 1.Definitions,principlesandrules)

IEC 60364-5-52 Low-voltage electrical installations Part 5-52.Selection and installation of electrical equipment wiring system (Low-voltage

electricalinstalations-Part 5-52.Selectionanderectionofelectricalequipment-Wiringsystems)

IEC 60445 The basic principles and safety principles of human-machine interface, signs and identifications. Identification of equipment terminals, wire ends and wires

(Basicandsafetyprinciplesforman-machineinterface,markingandidentification-Identificationof equipmentterminals.conductorterminationsandconductors)

IEC 60664-1 Insulation coordination of equipment in low-voltage systems-Part 1.Principles,