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

GB/T 21956.2-2024

Replacing GB/T 21956.3-2015; GB/T 21956.4-2009

**Tractors for agriculture and forestry - Roll-over protective
structures on narrow tractors - Part 2: Rear-mounted ROPS**

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(English Translation)

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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.

This document is Part 2 of GB/T 21956 "Rollover protection devices for narrow-track wheeled tractors for agriculture and forestry". The following parts have been published.

--- Part 1. Front loading;

--- Part 2. Rear mounted.

This document replaces GB/T 21956.3-2015 "Test methods and acceptance conditions for the strength of protective devices on narrow-track wheeled tractors for agriculture and forestry" Part 3: Rear-mounted static test method" and GB/T 21956.4-2009 "Strength test method for protective devices of narrow-track wheeled tractors for agriculture and forestry" Test methods and acceptance conditions Part 4: Post-type dynamic test method", which is consistent with GB/T 21956.3-2015 and GB/T 21956.4- Compared with 2009, in addition to structural adjustments and editorial changes, the main technical changes are shown in Appendix A.

This document is modified to adopt ISO 12003-2:2021 "Agricultural and forestry tractors - Narrow-track wheeled tractors - Rollover protection devices - Part 2: Rear placement".

This document has the following structural adjustments compared to ISO 12003-2:2021.

--- Added Appendix A;

--- Appendix B corresponds to Appendix A in ISO 12003-2:2021;

--- Appendix C corresponds to Appendix B in ISO 12003-2:2021;

--- Appendix D corresponds to Appendix C in ISO 12003-2:2021.

The technical differences between this document and ISO 12003-2:2021 and their reasons are as follows:

- a) Change "seat anchorage" to "seat belt anchorage" (see Chapter 1) to meet the requirements of this document;
- b) Added normative references GB/T 6236, GB/T 6960.1, GB/T 6960.7 and GB/T 21956.1, deleted ISO 12003-2:2021 refers to the normative document ISO 12934 and the term "agricultural tractor" (see Chapter 3) to adapt to our The technical conditions of the country increase operability;
- c) Added the symbol D' for the deformation of the protective device when the theoretical energy is reached, the symbol F' for the loading force required for the theoretical energy, and the additional The symbol for the drop height of the test pendulum, H' (see Chapter 4), is used to meet the requirements of this document;
- d) ISO 2408 (see 5.2.3.2) has been replaced with the normative reference GB/T 20118-2017 to adapt to my country's technical requirements. parts, increasing operability;
- e) The formula for raising the pendulum to a height above the point of impact (see 7.4.1.4) has been changed to " $H = 5.73 \times 10^{-2} m \times l$ ".

Change to " $H=5.73 \times 10^{-2}l$ " to meet the needs of this document;

- f) Change "the distance between the vertical plane where the loading point is located and the center plane of the tractor is 1/6 of the width of the top of the rollover guard" to "The distance between the vertical plane where the loading point is located and the outermost edge of the rollover protection device is 1/6 of the width of the top of the rollover protection device" (see 7.5.3, 7.5.4, Figure 9) to meet the needs of this document;
- g) The normative reference GB/T 6236 replaces ISO 5353 (see 8.1 and D.3.5) to adapt to my country's technical conditions, and adds Operability;
- h) Change D to D' and F to F' (see Figures 15, 16 and 17) to meet the requirements of this document;
- i) The normative reference GB/T 33641.2 replaces ISO 3776-2 (see Chapter 12) to adapt to my country's technical conditions and add Operability;
- j) The countries that must conduct low-temperature brittle fracture resistance tests in A.1 of ISO 12003-2:2021 have been deleted. This requirement does not apply to my country. Be applicable;
- k) ISO 630-1~630-4 (see B.3, B.6, D.3.6, D.4.3) to adapt to my country's technical conditions and increase operability;
- l) The normative reference GB/T 229 replaces ASTM A370 (see B.5) to adapt to my country's technical conditions and increase operability. Sex;
- m) ISO 80000-1 (see D.1) has been replaced by the normative reference GB 3100 to adapt to my country's technical conditions and increase operability. Sex;

n) Change "according to Table B.1" to "according to Table D.6" (see D.4.4) to meet the needs of this document;

o) The "Test report approval number" in Table D.6 and Table D.9 of ISO 12003-2:2021 has been deleted. This requirement is not applicable in my country. The following editorial changes were made to this document.

--- Added the textual expression of the definition of term 3.6;

--- Deleted the sources of some terms in Chapter 3 of ISO 12003-2:2021;

--- Change 5.3.2.1~5.3.2.6 of ISO 12003-2:2021 to list items a)~f);

--- Change "5.2.3" in 7.5 to "5.3", corrigendum to ISO 12003-1:2021;

--- Deleted the reference to ISO 12003-2:2021.

Introduction

A tractor is an agricultural machine that performs multiple tasks while traveling. Its working parts are complex and its working environment is harsh.

The rollover protection device is a device that is installed on the tractor during farmland operation.

A structural device that protects the operator in the event of a rollover, thereby reducing the possibility of injury to the operator due to a rollover accident.

The standard for rollover protection devices for narrow-track wheeled tractors is of great significance to improving the safety technology level of tractors, reducing accident risks and protecting operators.

In this regard, my country has made great progress in the field of tractor by referring to and studying international standards and advanced foreign standards.

The industry has established a complete set of safety-related standards, including mandatory national standards.

This document translates the International Organization for Standardization (ISO) standard for rollover protection for narrow-track wheeled tractors and is intended to help domestic tractors Tractor companies understand the provisions of international standards, which facilitates the export of tractors from my country.

International standards classify narrow-track tractor rollover protection devices according to different installation positions, so GB/T 21956 is divided into the following 2 parts.

--- Part 1. Pre-installed. The purpose is to be consistent with international standards and to facilitate testers to use this standard.

--- Part 2. Post-installation. The purpose is to be consistent with international standards and

to facilitate testers to use this standard.

The revision of GB/T 21956.3-2015 and GB/T 21956.4-2009 firstly considers the convenience of using this document.

The dynamic test method and static test method of the rear rollover protection device are combined into one document; secondly, the actual situation in my country is taken into consideration.

According to the situation, some contents of the international standard were added, deleted and modified, and the applicability and safety of this document in my country were improved without affecting the use of the standard.

Operability; Finally, the international standard was revised to improve the accuracy of this document. This revision truly achieved the test method The purpose of one-time inspection and global recognition of standards can better promote trade, exchanges and technical cooperation.

1 Scope

This document specifies the static and dynamic strength test procedures for rear-mounted rollover protection devices on narrow-track agricultural and forestry wheel tractors.

The acceptance conditions for the cab, rear fixed or foldable double-column and frame-type rollover protection devices are determined, and the safety belt fixing Optional test procedures for fixed devices and foldable rear rollover protection devices.

This document applies to tractors with the following characteristics.

---The ground clearance of the lowest point of the front and rear axles shall not exceed 600mm (excluding the lowest point of the differential);

--- For tractors with front or rear wheels equipped with tires of the largest size, whether the wheelbase is fixed or adjustable, the minimum wheelbase of the tractor shall not be greater than 1150mm, including the case where the front and rear axles are equipped with tires of the same specification and size;

--- The mass of a tractor in a fixed driving position without counterweight (including rollover protection and tires of the maximum size recommended by the manufacturer) is greater than 400kg;

--- Tractor mass without counterweight (including rollover protection device and maximum size recommended by the manufacturer) for two-way travel (two-way seat and steering wheel) inch tire) is greater than 400kg and less than 3500kg, and the maximum permissible mass is less than 5250kg;

---Mass ratio (mr) is not greater than 1.75;