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

GB/T 21956.1-2024

Replacing GB/T 21956.1-2015; GB/T 21956.2-2015

**Tractors for agriculture and forestry - Roll-over protective
structures on narrow tractors - Part 1: Front-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 1 of GB/T 21956 "Rollover protection devices for narrow-track wheeled tractors for agriculture and forestry". GB/T 21956 has been The following parts have been published.

--- Part 1. Front loading;

--- Part 2. Rear mounted.

This document replaces GB/T 21956.1-2015 "Test methods and acceptance conditions for strength of protective devices on narrow-track wheeled tractors for agriculture and forestry" Part 1: Front static test method" and GB/T 21956.2-2015 "Strength test of protective devices for narrow wheel tractors for agriculture and forestry" Test methods and acceptance conditions Part 2: Front-end dynamic test method", GB/T 21956.1-2015 and GB/T 21956.2- Compared with 2015, in addition to structural adjustments and editorial changes, the main technical changes are shown in Appendix A.

This document is modified to adopt ISO 12003-1:2021 "Agricultural and forestry tractors - Narrow-track wheeled tractors - Rollover protection devices - Part 1: Front placement".

This document has the following structural adjustments compared to ISO 12003-1:2021.

--- Added Appendix A;

--- Appendix B corresponds to Appendix A in ISO 12003-1:2021;

--- Appendix C corresponds to Appendix B in ISO 12003-1:2021;

--- Appendix D corresponds to Appendix C in ISO 12003-1:2021;

--- Appendix E corresponds to Appendix D in ISO 12003-1:2021.

The technical differences between this document and ISO 12003-1:2021 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 "mass ratio (mr) not greater than 1.75" (see Chapter 1), which is consistent with GB/T 21956.2-2024;
- c) Added normative references GB/T 6236, GB/T 6960.1 and GB/T 6960.7, and deleted ISO 12003-1:2021 The normative references ISO 12934 and the term "agricultural tractor" (see Chapter 3) are added to adapt to the technical conditions of my country. Operability;
- d) The symbol H' for the drop height of the additional test pendulum (see Chapter 4) is added to meet the requirements of this document;
- e) 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;
- f) The normative references ASAES313 and ASAE EEP542 in 7.3.2.1 of ISO 12003-1:2021 have been deleted to adapt to my country's technical conditions increase operability;
- g) Change "tractor reference mass greater than or equal to 2000kg and less than 3000kg" to "tractor reference mass greater than or equal to (2000kg or more)" (see 8.5.3.5) to meet the requirements of this document;
- h) 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 8.6.3 and 8.6.4) to meet the needs of this document;
- i) The normative reference GB/T 6236 replaced ISO 5353 (see 9.1 and D.3.5) to adapt to my country's technical conditions, and added Operability;
- j) Change D to D' and F to F' (see Figures 13, 14 and 15) to meet the requirements of this document;
- k) The normative reference GB/T 33641.2 replaces ISO 3776-2 (see Chapter 13) to adapt to my country's technical conditions and add Operability;
- l) The countries that must conduct low-temperature brittle fracture resistance tests in A.1 of ISO 12003-1:2021 have been deleted. This requirement does not apply to my country. Be applicable;
- m) 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;
- n) The normative reference GB/T 229 replaces ASTM A370 (see B.5) to adapt to my country's technical conditions and increase operability Sex;

o) 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;

p) The "Loading force applied to the rear rigid component" in C.4.2.1 of ISO 12003-1:2021 has been deleted to meet the requirements of this document. Use as needed;

q) The "Test report approval number" in Table C.6 and Table C.9 of ISO 12003-1:2021 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 12003-1:2021;

--- Change "5.2.3" in 8.6 to "5.3", corrigendum to ISO 12003-1:2021.

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 the different installation positions, so GB/T 21956 is divided into the following 2 types. parts.

--- Part 1. Front-end. 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 21956.1-2015 and GB/T 21956.2-2015 firstly considers the convenience of using this document.

The dynamic test method and static test method of the front 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 front-mounted rollover protection devices on narrow-track agricultural and forestry wheel tractors.

The acceptance criteria for front fixed or foldable double-pillar (including all attached rear rigid components) rollover protection devices are determined.

This part specifies optional test procedures for the folding force of seat belt anchorage devices and front 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 maximum tyre size on the front or rear wheels, whether the wheelbase is fixed or adjustable, the minimum wheelbase of the tractor shall not be greater than 1150mm;

--- The mass of the tractor without counterweight (including rollover protection and the largest tire recommended by the manufacturer) is greater than 400 kg and less than 3500kg;

--- Equipped with a double-post rollover protection device that can only be installed in front of the seat marking point (SIP);

---Mass ratio (m_r) is not greater than 1.75.