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

GB/T 27664.3-2026

Replacing GB/T 27664.3-2012

**Non-destructive testing instruments - Characterization and
verification of ultrasonic test equipment - Part 3: Combined
equipment**

无损检测仪器 超声检测设备的性能与检验 第3部分：组合设备

(English Translation)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is Part 3 of GB/T 27664, "Performance and Inspection of Ultrasonic Testing Equipment for Nondestructive Testing".

The following sections have been released.

---Part 1: Instruments;

---Part 2: Probe;

---Part 3: Combined Equipment.

This document replaces GB/T 27664.3-2012 "Performance and Inspection of Ultrasonic Testing Equipment for Nondestructive Testing - Part 3: Combined Equipment".

Compared with GB/T 27664.3-2012, the main technical changes in the "Preparation" are as follows, except for structural adjustments and editorial modifications.

- a) A new chapter on "Terms and Definitions" has been added (see Chapter 3);
- b) A new chapter on "General Requirements" has been added (see Chapter 4);
- c) A new chapter on "Personnel Qualifications" has been added (see Chapter 5);
- d) Added "Benchmark Measurement of Characteristic Parameters" (see 6.1);
- e) The requirements for calibration blocks used in testing have been changed (see 6.3.2.1, 6.3.3.1, 6.5.1, 6.6.2, and 3.3.1.1 and 3.3.2.1 in the 2012 edition).
3.4.3.1, 3.4.4.1);
- f) Added "Vertical linearity" (see 6.4), and removed "Time-based linearity" and "Linearity of device gain" (see 3.2.1 and 3.2.2 in the 2012 edition);
- g) Change "tolerance" to "acceptance standard" (see 6.2.2, 6.3.2.3, 6.3.3.3, 6.3.4.3, 6.6.3, and 3.3.1.3 in the 2012 edition).
3.3.2.3, 3.4.3.3, 3.4.4.3).

This document is equivalent to ISO 22232-3:2020 "Nondestructive testing - Performance and inspection of ultrasonic testing equipment - Part 3: Combination equipment".

The following minimal editorial changes have been made to this document.

---To align with existing standards, the standard name has been changed to "Performance and Inspection of Ultrasonic Testing Equipment for Non-destructive Testing" (Standard No. 3).

Part. Combined equipment.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no 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 on Standardization of Testing Machines (SAC/TC122).

Introduction

GB/T 27664.3 "Performance and Inspection of Ultrasonic Testing Equipment for Nondestructive Testing - Part 3: Combined Equipment" specifies the use of appropriate...

The measurement methods and acceptance criteria for determining the working characteristics of an ultrasonic testing instrument and ultrasonic probe combination using standard test blocks are described. This applies to production or application environments.

This is applicable to all users and its purpose is to inspect whether the combined equipment is working properly and whether its performance meets the requirements after

production or before use.

GB/T 27664 "Performance and Inspection of Ultrasonic Testing Equipment for Nondestructive Testing" is divided into the following three parts.

---Part 1: Instrumentation. The purpose is to clarify the performance characteristics of the A-type pulse ultrasonic testing instrument, its measurement methods, and acceptance procedures.

standard.

---Part 2: Probes. The purpose is to clarify the performance testing of ultrasonic probes after fabrication, including measurement methods and acceptance procedures.

standard.

---Part 3: Combined Systems. The purpose is to illustrate the determination of the combination of an ultrasonic testing instrument and an ultrasonic probe using appropriate standard calibration blocks.

Measurement methods and acceptance criteria for working characteristics.

GB/T 27664, "Performance and Inspection of Ultrasonic Testing Equipment for Nondestructive Testing," consists of three independent parts that also complement each other, forming a comprehensive standard.

A complete standard system describes the measurement and verification methods for the performance of A-pulse ultrasonic testing instruments, probes, and combined systems.

Performance of non-destructive testing instruments and ultrasonic testing equipment
Inspection and Testing Part 3: Combined Equipment

1 Scope

This document specifies the use of ultrasonic testing equipment (including instruments, probes, and connectors) with calibration blocks appropriate for the testing purpose to verify the assembly.

Methods and acceptance criteria for cable performance.

The methods specified in this document are primarily applicable to manual single-channel ultrasonic testing instruments conforming to ISO 22232-1 and those conforming to ISO 22232-2.

This document describes manual ultrasonic nondestructive testing using single-crystal or dual-crystal probes. It also applies to multi-channel instruments. For automated testing equipment, [further details are needed].

Additional testing may be required to ensure satisfactory performance.

The methods specified in this document are applicable to operations performed by personnel under on-site or workshop conditions.

The methods specified in this document are not applicable to proving that the equipment is suitable for a specific application.

This document does not apply to ultrasonic instruments that use continuous waves.

This document also does not apply to phased array ultrasonic systems (see ISO 18563-3). When phased array instruments are combined with single-crystal or dual-crystal probes...

This document applies to this combination.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

ISO 2400 Non-destructive Testing - Ultrasonic Testing Calibration Block No. 1 Note. GB/T 19799.1-2015 Nondestructive testing - Ultrasonic testing - Calibration block No. 1 (ISO 2400:2012, IDT) ISO 5577 Non-destructive testing - Ultrasonic testing - Vocabulary Note. GB/T 12604.1-2020 Nondestructive Testing Terminology - Ultrasonic Testing (ISO 5577:2017, MOD) ISO 7963 Non-destructive testing - Ultrasonic testing - Calibration block No. 2 Note. GB/T 19799.2-2024 Nondestructive testing - Ultrasonic testing blocks - Part 2: Standard block No. 2 (ISO 7963:2022, IDT) Note. GB/T 9445-2024 Qualification and Certification of Nondestructive Testing Personnel (ISO 9712:2021, IDT) ISO 22232-1 Non-destructive testing - Characteristics and inspection of ultrasonic testing equipment - Part 1: Instruments Note. GB/T 27664.1-2026 Nondestructive testing instruments - Performance and inspection of ultrasonic testing equipment - Part 1: Instruments (ISO 22232-1:2020) IDT) ISO 22232-2 Non-destructive testing - Characteristics and inspection of ultrasonic testing equipment - Part 2: Probes (Non-destructive testing equipment) Note. GB/T 27664.2-2026 Nondestructive testing instruments - Performance and inspection of ultrasonic testing equipment - Part 2: Probes (ISO 22232-2:2020) IDT)