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

GB/T 28880-2012

**Non-destructive testing -- Evaluating performance
characteristics of ultrasonic pulse-echo testing systems
without the use of electronic measurement instruments**

(English Translation)

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Foreword

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

This standard uses redrafted Law Amendment uses ISO 18175:2004 "without destructive testing of electronic measuring instruments for ultra pulse reflection Evaluation of sound detection system performance characteristics. " this standard and ISO 18175:2004 technical differences and their reasons are as follows.

--- Information on normative references, this standard has been adjusted with technical differences, in order to adapt to China's technical conditions, adjustment Focus reflected in Chapter 2, "Normative references", the specific adjustments are as follows.

- with considerable technical content GB/T 11259-1999 instead ASTM E428-2000 (see

6.4.2);

- equivalents adoption of international standards GB/T 12604.1 instead of ISO 5577 (see Chapter 3);

- Increased use of international standards ISO 2400 equivalent in the file list. 1972 GB/T 19799.1-2005 (see Appendix C, C.1.3);

- Delete the file list in the ISO 18175. ASTM E1316-2002a "NDT term" original 2004 references, this standard defines the terms included in the GB/T 12604.1 in;

- Delete the file list in the ISO 18175:2004 original reference JIS Z2352, and ISO 18175:2004 references Content JIS Z2352 direct cost to prepare a standard clause (see 6.4.5 and 6.4.6).

- According to the norms of standard mechanical drawing this standard design and dimensioning method;

- The standard uniform application of the International System of Units (SI);

- Added Appendix B "RB-RA type Permissible, RB-RC type, RB-E-type reference block";

- Added Appendix C "sensitivity and determination methods adopted resolution oblique detect when." this standard made the following editorial changes.

- Use the "standard" instead of "this International Standard";

- Remove the ISO 18175:2004 foreword, preface rewritten.

Please note that some of the content of this document may involve patents. Release mechanism of the present document does not assume responsibility for the identification of these patents.

The standard proposed by China Machinery Industry Federation.

This standard by the National Standardization Technical Committee tester (SAC/TC122) centralized.

This standard was drafted. first Chinese company Beijing Institute of Aeronautical Materials aviation industry, Changchun Mechanical Engineering Research Institute Co.

Division of Guangzhou University.

1 Scope

This standard describes the assessment of pulse-echo ultrasonic detector (hereinafter referred to as the detector) following the performance characteristics of the method.

- Horizontal limit and horizontal linear;

- Vertical Limit vertical and linear;

- Resolution of the incident surface and back;
- Sensitivity and noise;
- Accuracy after calibration gain controller.

Assessment of these characteristics is mainly used for comparison between the detector, or through periodic retesting for the assessment of a given detector characteristics. Long-term changes, these changes may be a sign of the failure detector will occur. If the change exceeds a given limit, the detector needs to be corrected or maintenance.

This standard can also be used to assess the use of pulse wave trains and A-type display (RF or video) of the ultrasonic detector. This method is suitable for the workshop or site conditions, and no other electronic measuring instruments.

This standard does not provide for the detection performance of the system to be limits, and if the need for such acceptance criteria shall be specified by the consumer. The standard Registration acceptance criteria presented only as an example, client and end-user control file contains more or less restrictive test limits. Predetermined parameters need assessment, testing conditions and frequency, as well as reports and other data required by users should also be determined. This standard can be Used to assess the integrity of the testing system comprises a probe, detector, coupling, fixtures, and external alarms and auxiliary devices, mainly applies the system does not change the state of the system or reused without replacement parts. This standard is not a substitute for a given material used for the detection system calibration.

In addition to being assessed detector, the required testing apparatus including selected reference block and precision external attenuator (when specified at the time).

This standard also contains the outcome of the application and assessment of evaluation methods and other aspects of the terms of interpretation.

Alternate methods of the present examples of the standard or other methods only when the customer agrees to use.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

GB/T 11259-2008 and produce destructive testing method for detecting ultrasonic testing of steel reference blocks GB/T 12604.1 Terminology for nondestructive testing Ultrasonic testing (GB/T 12604.1-2005, ISO 5577:2000, IDT) GB/T 19799.1-2005 destructive testing ultrasonic testing calibration block No. 1 (ISO 2400. 1972, IDT) ASTM E114 contact method to direct the beam of ultrasonic pulse echo detection procedures (ASTM E114-1995,

Standard practice for ultrasonic pulse-echo straight-beam examination by the contact method)
ASTME127 aluminum production and inspection rules ultrasound standard reference blocks
(ASTME127-1998, Standard