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

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**Calibration Specification for Field Parameters of Ultrasound
Flaw Detector Transducers
(English Translation)**

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Introduction

This specification is based on the rules and formats given in JJF 1071-2010 "Rules for the preparation of national metrological calibration specifications".

Line preparation.

This specification refers to GB/T 18694-2002 "Non-destructive testing of ultrasonic testing probes and its characterization of the sound field", ASTM E1065-08 Standard Guide for Evaluating Characteristics of Ultrasonic Scanners (Standard Guide for the measuring method described in Evaluating Characteristics of Ultrasonic Search Units), the main characteristics of the sound field refer to ASTM E1065-08, including near field length/focal length, beam diameter, beam spread angle, field depth, etc.

parameter.

This specification is the first release.

Ultrasonic flaw detector transducer sound field characteristics calibration specification

1 Scope

This specification specifies the sound field of an ultrasonic transducer (also called "ultrasonic probe") used for ultrasonic non-destructive testing.

Metering characteristics, calibration conditions, and calibration methods. This specification applies to planes with frequencies in the range of (0.5 to 15) MHz Ultrasound transducers and focused ultrasound transducers. Other ultrasonic transducers and their arrays can be referenced for calibration of the sound field characteristics.

use.

2 references

This specification refers to the following documents.

JJF 1001 Universal Measurement Terms and Definitions JJF 1034 Acoustic Measurement Terms Terms and Definitions GB 3102.7 Acoustic quantities and units GB/T 16540-1996 Ultrasonic field characteristics and measurement water in the frequency range from (0.5 to 15) MHz Hearing method GB/T 18694-2002 Non-destructive testing ultrasonic inspection

probe and its sound field characterization ASTM E1065-08 Standard Guide for Evaluating Characteristics of Ultrasonic Scanners (Standard Guide for Evaluating Characteristics of Ultrasonic Search Units) for dated references, only dated editions apply to this specification; all undated references the latest version (including all amendments) applies to this specification.

3 Terms and units of measure this specification uses the related terms and definitions in JJF 1001 and JJF 1034.

This specification uses the amount and unit specified in GB 3102.7.

3.1 Sound beam diameter in the section of the sound field parallel to the surface of the ultrasonic transducer, the choice is several decibels below the maximum (generally 3 dB or 6 dB) of a closed curve consisting of the same amplitude points and fitting it to form a circle, the diameter of the circle is the beam diameter in millimeters (mm).

3.2 beam spread angle beam spread Taking the acoustic axis as a reference line, in a certain section of the acoustic axis direction, the acoustic pressure at the acoustic axis is selected to be lower than that at the acoustic axis.

The points of decibel (usually 3dB or 6dB) are fitted into two straight lines, and the angle between the two straight lines is the segment.

The sound field spread angle in degrees, in degrees (°).

3.3 depth of field in acoustic pressure field distribution on the acoustic axis, the maximum amplitude sound pressure drops 6 dB before and after the maximum amplitude (focal point) the distance between two locations is the field depth of the ultrasonic transducer in millimeters (mm).